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ORGANIZATIONAL INTERVENTION ON THE INTEGRATION OF NEWS EMPLOYEES WITHIN THE ORGANIZATION

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ABSTRACT

This paper aims to present the theoretical aspects regarding the integration of a new employee within an organization, but also to elaborate a program on facilitating the integration process. Many authors have shown that integration is a stressful process, which is why it is important for the new employee to be presented with the conditions and requirements as clearly as possible. Integration can be considered a process of exchange between the organization and the individual because each comes with its own values, conceptions, and purposethis process is to ensure the cohesion unit of the work teams. Integration is also considered a complex social process that is very important for the individual because if the relationships that the workplace develops are satisfactory then he lives with the feeling that within that framework, respectively the workplace, he can develop himself and his skills.

These relationships are not always harmonious, and at this moment the integration is more difficult, raising difficult problems to solve, but there are also good relations between the members of the group, and in this case the integration of an individual will not suffer[1]

Key words *:* new employee , integration, job , organization

INTRODUCTION

"Professional integration is a later phase of employment. The new employee will have to be introduced to the organization, to the work group and to his / her place of work and from this moment it can be talked about the integration of the new income. During the integration period the new employees receive information about the duties of the new job, about their job, about colleagues, boss ” or subordinates and about the entire organization[2] ".

In order to make the integration of a new employee as easy as possible, it is important for the employee to be presented with clear and concise working conditions, work requirements, and not least, the employee

[1] Cindrea, I. (2008). Managementul resurselor umane. Sibiu: Editura Universităţii „Lucian Blaga" din Sibiu.
[2] Abrudan, MM. (2003). Managementul resurselor umane. Oradea: Editura Universităţii din Oradea. Pagina 103

must be confident about his successes and ability to carry out and complete the tasks received.

MATERIAL AND METHOD

The methods used in this study were different: the historical method, the comparative method, the sociological method, the logical method and the analytical one, their aim was the systematic analysis of the information selected from the sources studied in order to develop personal points of view and conclusions about the stated objectives.

RESULTS AND DISCUSSION

Professional integration represents a step that the individual has to go through in his professional life. Also, integration can be considered a process of exchange between the organization and the individual because each one comes with its own values, conceptions, and the purpose of this process is to ensure the unity of the cohesion of the work teams[3].

In order to make the integration of a new employee as easy as possible, it is important for the employee to be presented with clear and concise working conditions, work requirements, and not least, the employee must be confident about his successes and ability. to carry out and complete the tasks received. Integration is an important operation, which raises many problems and cannot succeed without a specific program, for two reasons:

- Any individual who changes a job is subjected to psychological pressure, by demonstrating their abilities in a new environment. It is therefore necessary to take into account these additional difficulties that the new employee is going through and try to reduce them

- During the integration a normal adaptation takes place the new work tasks and a phase of successive accumulations, until the yield becomes the normal one; reducing the duration of this phase can be achieved through rapid integration[4]".

The way in which the new employee integrates into the workplace is important for the company because the degree of integration can have an influence on productivity, it can increase or otherwise it may decrease. An increase in productivity brings with it many advantages (high remuneration, improvement of human resources, job stability, etc.). Therefore, "integration

[3] Leher, V şi Deaconu, A. (2008). Managementul resurselor umane: Teorie şi practică. Bucureşti: Editura Economica. Pagina 97-98

[4] Roşca, C. Costurile recrutării, angajării şi integrării în Roşca, C., Vărzaru, M. & Roşca, I.G.(2005) Resurse Umane: Management şi gestiune. Bucureşti: Editura Economica. pagina 183

represents the gathering together of several components, activities, production units or persons, in order to achieve a common result[5]".

"Professional integration is a post-employment phase. It consisted of the intense and active integration in a group, in the mentality, its specific lucrative and aspirational activities, the Integration in a group will have forms, nuances, conformities and admissibilities, which will be expressed on the one hand by the person in cause, and on the other hand the degree of acceptance of the group.[6] "

The socio-professional integration of the new employees is a specific task of the Human Resources Department, and the introduction of the employee in the organization represents the first stage of this process. "The introduction of a new employee in the organization is realized from the moment of the recruitment of the candidates by the company in order to fill one or more vacancies. In general, each candidate acquires the first information about a company when reading the employment announcement[7]".

Also, the interview, the knowledge of the organization, the internal regulation, the organizational chart are aspects that cannot be missing from an integration process.

- the department / department / office where he will work
- the tasks and responsibilities related to the job
- superiors / subordinates (if applicable) and the persons with whom he / she will collaborate
- evaluation criteria, but also the benefits and possibilities of advancement[8]

The new employee should not be "bombarded" with all the information from day one. The transfer of information can be graded and carried out by several persons. Starting a new job remains a stressful process, even if the integration and installation actions are well designed. The period of integration of a new employee can take, depending on the case, from a few months to a year[9]

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[5] Leher, V şi Deaconu, A. (2008). Managementul resurselor umane: Teorie şi practică. Bucureşti: Editura Economica. Pagina 96

[6] Scholz, M.M. (2000). Managementul resurselor umane. Bucureşti: Editura Economlca. 19. Sulea, C. (2004). Latura întunecată a organizaţiilor: Comportamentul contraproductw la locul de muncă.pagina 90

[7] Leher, V şi Deaconu, A. (2008). Managementul resurselor umane: Teorie şi practică. Bucureşti: Editura Economica. Pagina 329

[8] Leher, V şi Deaconu, A. (2008). Managementul resurselor umane: Teorie şi practică. Bucureşti: Editura Economica

[9] Cuc, S. (2008). Managementul resurselor umane. Oradea: Editura Universităţii din Oradea. Pagina 161

The third stage is the training in the workplace. The employee receives information from the supervisor or another member of the organization about the way of working, the priority of the duties and the use of the work equipment. This training can be done at the workplace and even outside it[10].

For Schein integration is "the process by which a new employee learns: the main goals of an organization, the means by which these goals can be achieved, the responsibilities that lie with the organizational role held, the behavioral models required for the performance of the role, the rules and principles that allow maintaining it" the identity and integrity of the organization, the philosophy that guides the organization's policy towards employees and customers, the climate in which the members of the organization interact[11]".

The last stage is the administration of the role, where "the employee becomes a full member of the organization, not considering an option for the position. Moreover, the employee carries out activity at the level of the respective position, and his results in work are analyzed and recognized by the organization. During this stage, the employee can become a model, being involved in the process of integrating into the work of other employees[12] " .Also, here it can form its own way of working, of arranging the Space, of organizing the activities to carry out the tasks received in the most optimal way.

The specialized literature offers us a multitude of integration models among which we meet: the welcome map, the seminar, the visit to the company, the guidance films, the work under tutorship, etc. "The integration models differ depending on the purpose of the employment. Thus, a person can be hired for a certain position (especially for executives) or for his potential (knowledge, creativity, mobility, adaptability)[13] ".

The welcome map contains a series of general information about the organization and, respectively, specific information about the organizational subdivisions with which it will come into direct contact. In addition it will contain other elements such as: the list of telephones in the organization, the internal addresses of those with whom it will come into contact in its activity, to facilitate the receipt and transmission of documents, the daily

[10] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica.

[11] Pânişoara, G.şi Pânişoara, I. (2007).Managementul resurselor umane. Iaşi: Editura Polirom. 12. Paina, NB (2003). Managementul resurselor umane. Cluj Napoca: Editura Accent. Pagina 60

[12] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica. Pagina 331

[13] Voicu, M. Integrarea profesională în Mathis,R., Nica, P., & Rusu, C. (1997) Managementul resurselor umane. Bucureşti: Editura Economica. Pagina 154

activity programs (the breaks provided in the program will be mentioned), the regulations within the organization, regulations and instructions in force, etc.

Even if it is one of the most used methods of integrating it, in addition to its advantages, it also has disadvantages:

Table no. 1. Welcome map - advantages and disadvantages

BENEFITS	DISADVANTAGES
- The complete set of documents that make up the content of the welcome map - Offers the employee the opportunity to form their own image regarding the working climate within the organization - The new employee has the opportunity to analyze in detail, the content of each document in the welcome map	- The formal and equidistant character of the process of integration into the work of a new employee - Ease of applying the method - The appearance of some misunderstandings or confusion at the level of the new employee regarding certain information about the company. - Lack of feeling of belonging of the new employee to the organization - Lack of direct dialogue between the new employee and a person who has experience and knows very well the respective company[14]

The seminar , as well as the welcome map, offers very useful information to the new employee, only that it will be carried out in an organizational framework (in the form of class hours) where the company history, the specific activity of the position, the methods will be presented to perform certain actions and even certain mistakes made by the old employees that must be avoided[15].

The seminar can also be held in the form of a presentation of the video projector, the projector, pictures, videos, etc.

Table no. 2. The seminar - advantages and disadvantages

BENEFITS	DISADVANTAGES
- The new employee has the opportunity to better understand the content of the information presented - The attractive character of the presentation - The possibility of using modern means of presentation - The interactive character of the presentation - the possibility to simulate real	- Relatively long time needed to prepare the presentation - The relatively high cost of this method: the cost of renting or cleaning and equipping a room, the hourly rate of the person designated for this purpose, the cost of editing the teaching materials - The risk of the appearance of the state of boredom at the level of the employee, generated by the monotonous

[14] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica. p 334

[15] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica. pagina334

situations, from the company - The retention of the new employee of some useful information by means of logical schemes or images	character of the presentation - The need to remove from the production of the respective employee[16]

The visit to the company is the method most often used by the organizations and it gives the new employee the opportunity to see each department / office / department to understand as much as possible the structure and the activity carried out in the respective company. This tour of the company is carried out with the chief of staff or a designated person, where they are provided with information about the company, rules and even short or long term goals[17].

Table no. 3. Visit to the company - advantages and disadvantages

BENEFITS	DISADVANTAGES
- Allows direct contact and familiarization of the new employee with the real working environment - Obtaining additional information that could be omitted in a simple description of the organization, during a discussion - It gives the new employee the opportunity to form his own image regarding the working climate within the organization - Direct contact of the new employee with the team he is part of - Familiarity with the route to be taken by an employee within the organization, up to the workplace	- The subjectivism that drives the visit to the company - Long time required to visit the company - Wide and efficient applicability, especially for small companies - High volume of information that the employee is familiar with during the visit. Which may exceed the assimilation capacity of the new employee - The state of physical and mental fatigue that can intervene at the level of the new employee[18]

"Every organization shows a certain degree of resistance to a new employee. This process, up to a certain level, is considered nonnal, considering that the group needs a certain period of time to know the new income and to accept it. Hofstede identifies an open system (the organization and its employees are open to newcomers, they are easily received in the organization) and a closed system (the organization and its employees are closed and secretive, the new employee must be encouraged and supported in the first days of its activity) ".

[16] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica. , pagina 334

[17] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica. pagina335

[18] Manolescu, A., Lefter, V. & Deaconu, A.(2007). Managementul resurselor umane. Bucureşti: Editura Economica., p 333

CONCLUSIONS

Professional integration represents a step that the individual has to go through in his professional life. Also, integration can be considered a process of exchange between the organization and the individual because each one comes with its own values, conceptions, and the purpose of this process is to ensure the unity of the cohesion of the work teams. Integration is also considered a complex social process which is very important for the individual because if the relationships he develops in the workplace are satisfactory then he lives with the feeling that within that framework, respectively the workplace, he can develop himself, his skills, he can value his knowledge and he can gain experience, thus realizing his vocation through his activities and responsibilities daily.

According to the literature, the stages of the integration process are: introducing the employee into the organization, accommodating the employee within the organization, training at the workplace and managing the role. Also, the specialized literature provides us with a series of integration models, the most common being the welcome map, the seminar and the visit to the company.

Professional integration can be considered an easier process only if the organization implements a professional integration program. To this end, some organizations offer new employees manuals or guides in which employees find all the information a new employee needs. Thus, within an organization, several persons / departments are responsible for integrating the new employee: the Human Resources department, the employee, the work colleagues, the head of the hierarchy and the training staff.

In order to make the integration of a new employee as easy as possible, it is important for the employee to be presented with clear and concise working conditions, work requirements, and not least, the employee must be confident about his successes and ability. to carry out and complete the tasks received.

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STUDY ON THE PRODUCTION AND MARKETING OF APPLES IN BIHOR COUNTY

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Abstract

The aim of this study was to highlight Bihor County's position within the existing Romanian context, in the period 2014-2018, regarding the production and trade of apples. Thus it is noted that Bihor County had 620,150 apple trees in 2018, which represented only 2.16% of the romanian total apple trees. This County obtained only 2.44% of the total Country production, that is 15,721 tons compared to 643,856 tons in Romania. The national trade balance for apples was deficient in 2018. Bihor County can improve its production and trade with apples by using the appropriate measures which support the production sector, such as PNDR 2014-2020.

Key words: apple production, apple trees, Bihor County, Romania

INTRODUCTION

Romania is a country with tradition regarding the cultivation of fruit trees. Fruit production and marketing is an important sector of activity, because it provides the products needed for the population consumption.

According to Eurostat, Romania is in the last places in terms of fruit consumption, although their benefits are well known.

Since joining the European Union, the fruit-growing sector has been supported by structural funds and measures that help the development of the rural area. (*Dona I., 2015, AFIR, PNDR 2014-2020*).

According to MADR, quoting NIS, apple is the second most cultivated fruit tree at the country level.

The North-West Region, of which Bihor County is part of, obtained the largest apple production in the country (*Chiurciu I.A. et al., 2018*).

In this study, will be presented, the number of apple trees, the apple production, as well as the yields obtained and the average selling price of apples in the agri-food markets in Bihor County.

MATERIALS AND METHODS

The information required for writing the paper was gathered by accessing databases with increased visibility, such as the National Institute of Statistics and specialized romanian and international sites. The indicators used are: apple trees number, apples production (tons), average apple

production (kg/tree) and average annual prices of apples sold in the agri-food markets, in the Bihor County. The studied period is 2014-2018. The methods used in the study were the documentation, the comparison, the percentage method. The information colected was presented in tables, illustrated graphically and interpreted.

RESULTS AND DISCUSSION

From the data collected from NIS, the fruit sector represents only 1.30% of the area occupied by the main crops in Bihor county. In 2018 the area occupied by orchards was of 3,969 ha, from which the individual farms mean 3,926 ha, in decline in the last years.

The total number of apples in 2018 was 2,015,494, of which 620,150 were cultivated in Bihor County that is 2.16% of the Romanian total apple trees (NIS).

Of the total trees in the county, 607,702 were cultivated in individual agricultural holdings (97.99%).

Figure 1 shows the number of apple trees raised in Bihor County, between 2014-2018. There is a slight increase of this number. In 2018, they increased by 0.65% more apple trees than in 2014. The highest number was recorded in 2015, of 644,498, and the lowest in 2014, of 616,169.

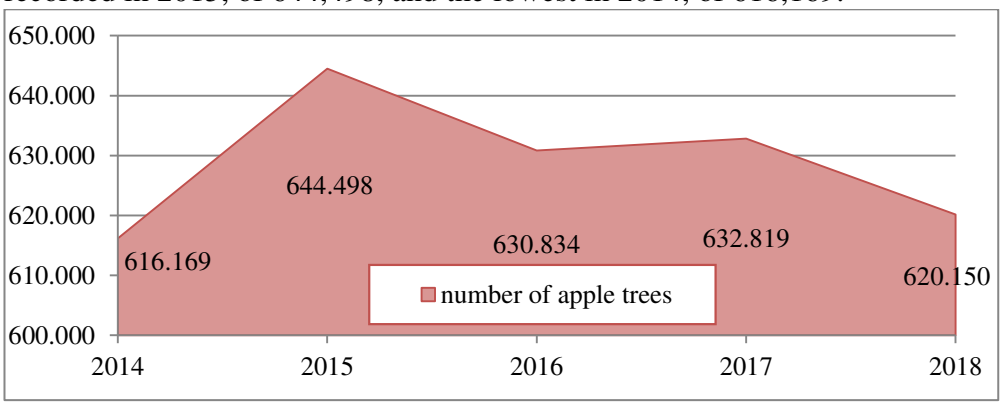

Fig. 1. Dynamics of the apple trees number in the period 2014-2018
Source: Own graphics based on NIS, Tempo On-line Database, 2019

Apples ranked second in the top of the most cultivated fruit tree categories in Bihor County, in 2018. The first place was occupied by plums, with 721,204 pieces (NIS), despite the fact that most apple trees are found in the North West Development Region (*Soare E., Chiurciu I.A., 2018*).

Regarding the total fruit production in Bihor County, in the last year, 2018, it increased to 49,928 tons (*NIS*).

In the last 2 years, the apple production has registered an upward trend (figure 2), although the number of apples is decreasing (figure 1). Compared to 2014, in 2018, the production was 24.3% lower.

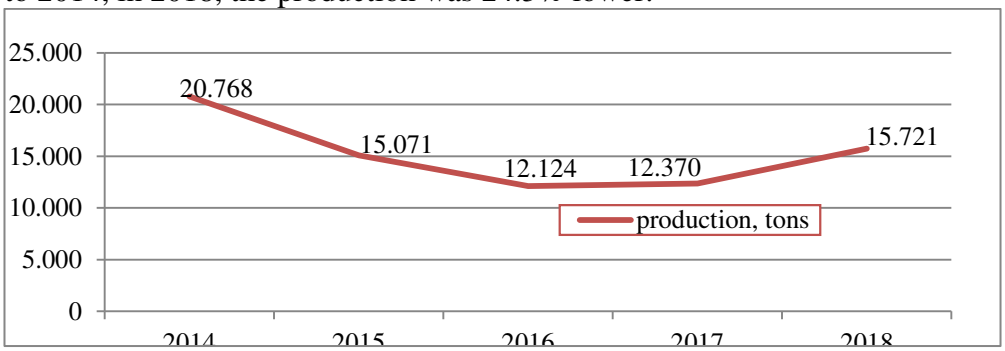

Fig. 2. Dynamics of the apple production during 2014-2018
Source: Own graphics based on NIS, Tempo On-line Database, 2019

Of the 15,721 tons harvested in 2018, 15,363 tons represented the contribution of individual agricultural holdings (97.72%).

The highest production of apples was obtained in 2014, of 20,768 tons and the smallest in 2016 - 12,124 tons.

Apple production in 2018 in Bihor County represented 2.44% of the total Country production (643,856 tons).

Analyzing the data presented in figure 3, it is found that the average production obtained for apples, in kg/tree, has varied during the analyzed period. Thus, the highest quantity of apples/tree was obtained in 2014, of 34 kg / tree, and the smallest in 2016, of 19 kg/tree.

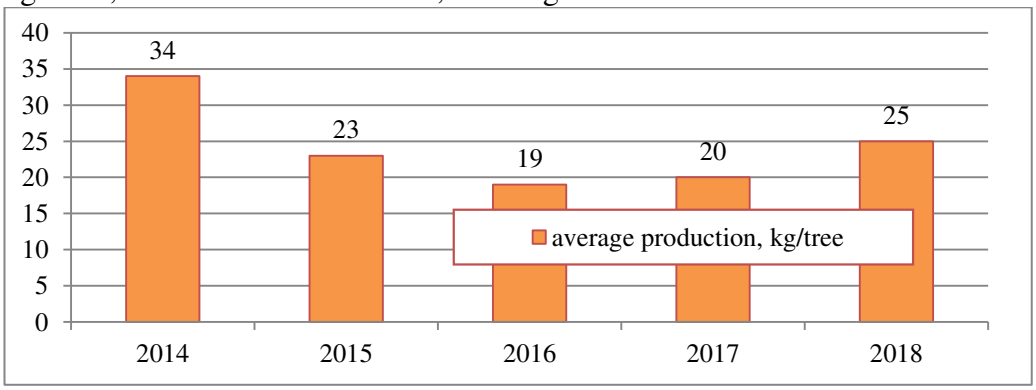

Fig. 3. Dynamics of the average apple production in Bihor County during 2014-2018
Source: Own graphics based on NIS, Tempo On-line Database, 2019

The increase of the average production of apples/tree, due to the inputs and favorable climatic conditions, led to the increase of the total production of apples in the county (figure 2), under the conditions in which the number of apples was decreasing (figure 1).

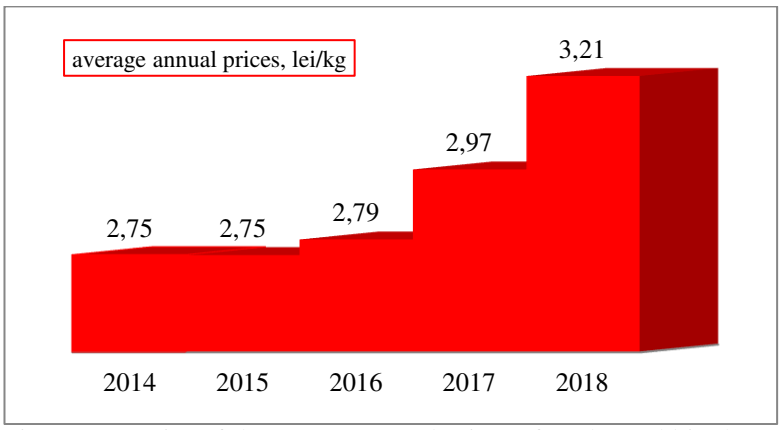

Fig. 4. Dynamics of the average annual prices of apples, sold in the agri-food markets, in the Bihor County during 2014-2018
Source: Own graphics based on NIS, Tempo On-line Database, 2019

The average selling prices of apples in Bihor County have been rising. It is noted that they increased by 16.73% in 2018, compared to 2014 and 2015, when the same value was recorded.

The balance of apples for Romania, in 2018, registered negative values - 46,875 thousand Euro, exports worth 1,935 thousand Euro and imports worth 48,810 thousand Euro (*DG Agri, ITC*). Being part of the Development Region with the largest production of apples, Bihor county must exploit its potential.

CONCLUSIONS

The main trends in the production and marketing of apples in bihor county during 2014-2018 were:

- the highest number of apple trees was 644,498 (2015), and the lowest number was recorded in 2014 (616,169 apple trees);
- the highest apple production at bihor county level was 20,768 tons (2014) and in 2016, the smallest - 12,124 tons.
- 19 kilograms/tree was average apple production, in 2016 and in 2014, the highest average apple production (34 kg/tree) was achieved.
- 3.21 lei/kg was the highest average annual prices of apples, sold in the agri-food markets, in the bihor county during 2014-2018.

Romanians consumed a smaller quantity of apples compared to other states and yet, the balance of apples in 2018 had negative values.

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THE EVOLUTION OF THE FRUIT-GROWING SECTOR IN BIHOR COUNTY

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Abstract

This paper analyses the main indicators reflecting the evolution of the fruit-growing sector in the Bihor County for the period 2014-2018. The most important indicators which are analyzed are the areas occupied by fruit orchards, the number of fruit trees, the production of fruits, the average level of production for each of them, the average level of price for each of them. It can be observed that the total areas occupied with -fruit plantations on bearing and the total fruit production are decreasing. From an economic point of view, plum plantations have a particular importance, occupying the first place in the County, as number of fruit trees and as production obtained. The data used in the paper was taken from the National Institute of Statistics and specialized international sites. The results of this analysis have been highlighted in relevant tables and graphics.

Key words: Bihor County, fruit production, fruit-trees sector

INTRODUCTION

Bihor County is located in the western part of Romania, in the historical region, Crisana, on the border with Hungary. The varied relief consists of mountains, hills and plains and is crossed by the rivers Ier, Barcau, Crişul Repede, Crişul Negru and its tributaries. The total area of this county is 7,544 km^2 (*Bihor County*).

According to Annex I of the EC Regulation No. 1059/2003, Bihor County is one of the six counties - NUTS 3 - which compose the North-West Development Region, North Transylvania (*Aurelia Ioana Chereji, 2016*).

Bihor County ranks second in terms of GDP in the North West Region and tenth in the top of counties in terms of contribution to national GDP (*Invest in Bihor*)

After Chiurciu et al., 2018, citing Condei R. et al., 2015, and North-West Region Presentation, in the North-West Development Region, of which the analyzed county is part of, agriculture is on the third place in the top of the economic sectors that participate to the regional GDP. Also, the labor employments in agriculture rank third the North-West Region.

The most developed branch of the agricultural sector in the county is the cultivation of cereals, Bihor County having the largest arable area, (*Manole Al.et al., 2014*).

The fruit-trees sector represents only 1.30% of the area occupied by the main crops in Bihor County, although the North-West Development Region has remarkable results in the number of cultivated apple trees, being first in the country (*NIS*).

In this context, the paper will present in the following the total area occupied with orchards on bearing, the fruit production, as well as the yields obtained and the average selling price of fruits in the agri-food markets in Bihor County.

MATERIALS AND METHODS

In order to present the evolution of the fruit-trees sector in Bihor county, the following indicators were analyzed: orchards on bearing- total areas, areas of the private sector, areas of individual agricultural holdings, total number of fruit trees and number for each fruit species, total production obtained and fruit production by fruit species, average production for the fruit species analyzed and the average selling price of the fruit in the agri-food markets. The indicators in this study were analyzed for the period 2014-2018.

All the results in this paper were presented in tables, illustrated graphically and interpreted.

RESULTS AND DISCUSSION

In Romania, an important sector of activity is represented by the fruit production and marketing sector because, firtsly, it provides the fruit quantities needed by the population for consumption and, secondly, it represents a part of the agri-food products export. Since joining the European Union, this sector became sustained by structural funds and measures to help developping the rural space (*Dona I., 2015*).

From the data taken from NIS, it can be seen that, in 2018, from the total of 261.5 thousand people engaged in activities that contribute to the national economy in the Bihor County, 23.98% worked in agriculture, forestry and fishing.

Thereby, Figure 1 shows the total areas cultivated with orchards on fruit, in the period 2014-2018.

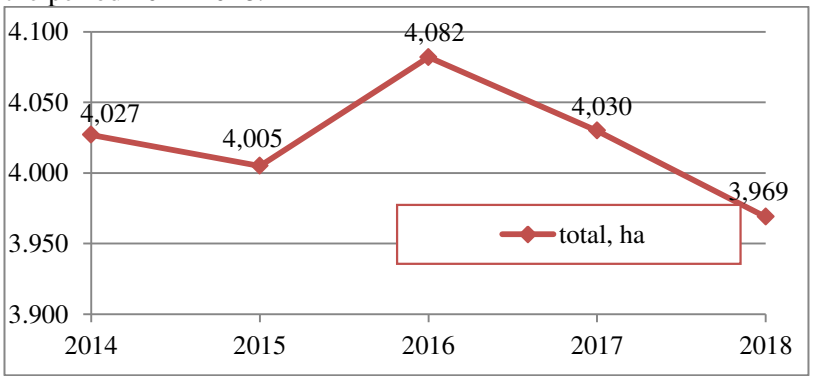

Fig. 1. Dynamics of the orchards on fruit, total area (ha) in Bihor County, 2014-2018
Source: NIS, Tempo On-line Database, 2019

In 2016 the largest area occupied by orchards was registered, of 4,082 ha, and the smallest in 2018, of 3,969 ha, in the total category. It is noticeable that from 2016 the orchards on fruit are declining. Compared to 2014, the decrease in 2018 was of 1.44%.

Table 1 analyzes the surfaces of the private sector with orchards on fruit and highlights those of the individual agricultural holdings in the period 2014-2018.

In the private sector, the same trend of decreasing the cultivated areas with orchards on fruit (-1.44%) is noted. For orchards in individual farms, the decrease was of 0.86%, in 2018 compared to 2014.

Table 1
Surface occupied with orchards on fruit in the private sector, in the Bihor County during the period 2014-2018 (ha)

Nr. crt.	Specification	2014	2015	2016	2017	2018	2018/2014 %
1.	Private sector, from which:	4,027	3,995	4,072	4,030	3,969	98.56
	individual farms	3,960	3,892	3,924	3,912	3,926	99.14

Source: Own calculation based on NIS, Tempo On-line Database, 2019

Of the total orchards on fruit, those from the individual agricultural holdings held 98.92%, in 2018, increasing compared to 2014, when they represented 98.37%.

The orchards on fruit of the individual agricultural holdings, which have the largest share of the total area of orchards in Bihor county, represented in 2018 17.51% of the total area of orchards in the North-West Development Region.

Figure 2 shows the total number of fruit trees in Bihor County, for the period 2014-2018. For the analyzed period there is a slight decrease of this number. In 2018, 0.79% less trees were cultivated compared to 2014. The highest number was registered in 2016, of 2,036,239, and the lowest in 2018, of 2,015,494.

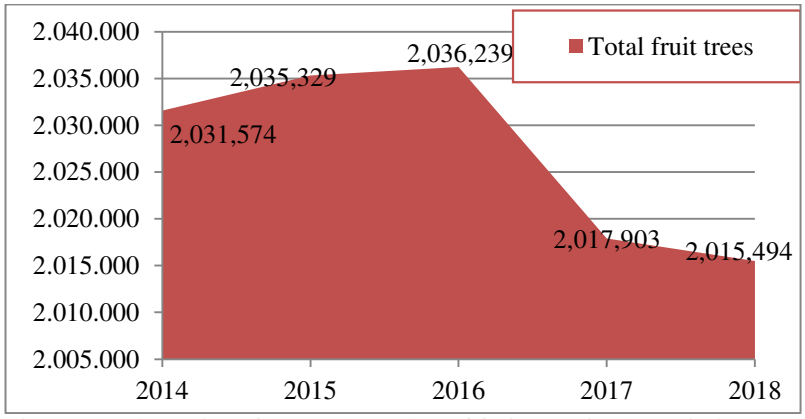

Fig. 2. The dynamics of the total number of fruit trees in the period 2014-2018
Source: NIS, Tempo On-line Database, 2019

Table 2 contains data on the number of trees from the main fruit trees species grown in the county, for the period 2014-2018.

The largest decrease in the number of trees is recorded in the category nectarines, of 27.40%, and the highest increase in the category "other fruit trees" - 84.02%. Decreases in the number of trees grown are also noted for plums, peaches and nuts.

Analyzing the centralized data in table 2 we notice that plum is the most cultivated fruit species in Bihor County. In 2014, a number of 730,191 plums were cultivated, so that this number would decrease, in 2018 being registered 721,204 plums, with 1.23% less.

According to Dana D. et al., 2018, plums are not the most numerous fruit trees in Macroregion One, which ranks 3rd in this category. In contrast, they are the most cultivated in the North-West Development Region, which owns 74.76% of the total plums grown in Macroregion One (*NIS*).

Table 2

Number of fruit trees, by fruit species, in the Bihor County during 2014-2018

Nr. crt.	Category of fruit trees	2014	2015	2016	2017	2018	2018/2014 %
1.	Plums	730,191	727,009	724,080	722,322	721,204	98.77
2.	Apples	616,169	644,498	630,834	632,819	620,150	100.65
3.	Pears	125,141	125,486	125,906	125,606	125,780	100.51
4.	Peaches	224,759	209,947	222,579	205,009	205,030	91.22
5.	Nectarines	13,031	8,868	9,492	9,463	9,460	72.60
6.	Cherries and sour cherries	131,494	130,368	132,179	131,746	132,487	100.76
7.	Apricots	113,146	113,542	115,737	114,874	114,855	101.51
8.	Walnuts	65,347	63,439	63,460	64,636	63,901	97.79
9.	Other fruit trees	12,296	12,172	11,972	11,428	22,627	184.02

Source: Own calculation based on NIS, Tempo On-line Database, 2019

The following fruit species commonly found in the county are apples and peaches. The number of apples increased during the analyzed period by 0.65%, while the number of peaches decreased by 8.78%.

Although in the North-West Development Region are cultivated the most apples in the country (*Soare E., Chiurciu I.A., 2018*), in Bihor county this species is ranked 2nd.

Other fruit species grown in the county, which registered in 2018 over 100,000 copies were: cherries and sour cherries - 132,487, pears - 125,780, apricots - 114,855. At all these fruit species there were seen slight increases in 2018, compared to 2014.

Regarding the fruit production, figure 3 shows the total quantity harvested in Bihor county during 2014-2018. In 2018 the total fruit production decreased by 5.04%, compared to 2014.

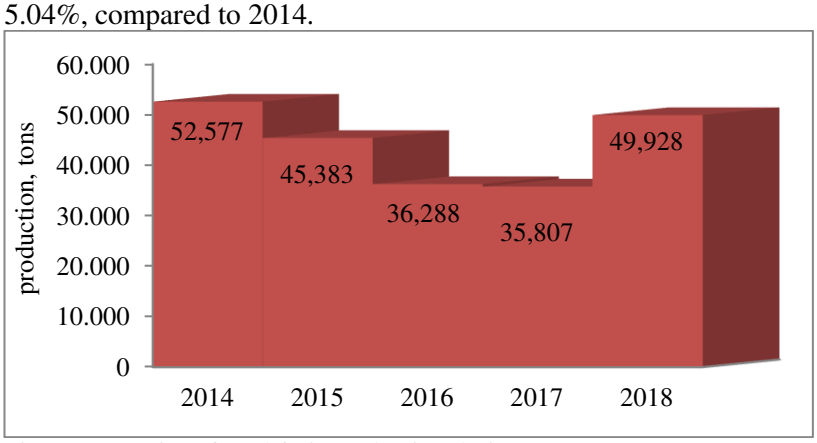

Fig. 3. Dynamics of total fruit production during 2014-2018
Source: NIS, Tempo On-line Database, 2019

The highest amount of fruits was obtained in 2014 - 52,577 tons. This production (t) does not correspond to the largest area (ha), but is influenced by the total production obtained for each species and by the average production / tree. The lowest production was recorded in 2017 - 35,807 tons.

As expected, the largest fruit production was obtained from plums (Table 3). In 2018 there was an increase of 38.38%, compared to 2014. The year in which the smallest quantity was harvested was 2016 - 9,314 tonnes.

Table 3
Fruit production (tonnes) in Bihor County during 2014-2018

Nr. crt.	Category of fruits	2014	2015	2016	2017	2018	2018/2014 %
1.	Plums	14,087	15,622	9,314	11,263	19,493	138.38
2.	Apples	20,768	15,071	12,124	12,370	15,721	75.70
3.	Pears	2,373	2,095	2,212	1,912	1,772	74.67
4.	Peaches	7,992	7,569	7,349	4,749	6,537	81.79
5.	Nectarines	412	197	229	117	126	30.58
6.	Cherries and	1,843	1,703	1,726	1,230	1,869	101.41

	sour cherries						
7.	Apricots	3,523	1,573	1,634	1,877	1,905	54.07
8.	Nuts	945	850	999	1,565	1,747	184.87
9.	Other fruits	427	493	421	339	405	94.85

Source: Own calculation based on NIS, Tempo On-line Database, 2019

Other categories of fruit that saw increases in production are cherries and sour cherries - 1.41% and nuts.

The decrease in the production of cherries and sour cherries at the level of the Macroregion, in the first part of the analyzed period, followed by the increase of the production, was also manifested at the county level, as shown in the table above (*Soare E., Dobre I. 2018*).

The production obtained from nuts had the highest increases, of 84.87%. This fact is due to the non-reimbursable European funds, accessed through the sub-measures PNDR 2014-2014 (*AFIR*). Walnut was one of the favorite fruit-tree species when setting up new orchards.

For the other categories of fruits there were decreases in production, and the largest decrease was at nectarines - 69.42%.

Although they are appreciated by consumers, the production of pears in the year 2017, in Romania, occupied only 4.61% of the fruit production realized (*Soare E., et al., 2019*), and due to the small production obtained in Bihor county (1,912 tonnes in 2017, 1,772 tonnes in 2018).

Average production (kg / tree) recorded fluctuations during the analyzed period (Table 4). There have been increases in plums and nuts and decreases for all the other fruits found in the Bihor County culture.

The largest increases in average production were recorded at nuts -92.86%, and the largest decreases at nectarines (59.37%).

Table 4

Average fruit production (kg / tree) in Bihor County during 2014-2018

Nr. crt.	Category of fruits	2014	2015	2016	2017	2018	2018/2014 %
1.	Plums	19	21	13	16	27	142.11
2.	Apples	34	23	19	20	25	73.53
3.	Pears	19	17	18	15	14	73.68
4.	Peaches	36	36	33	23	32	88.89
5.	Nectarines	32	22	24	12	13	40.63
6.	Cherries and sour cherries	14	13	13	9	14	100
7.	Apricots	31	14	14	16	17	54.84
8.	Nuts	14	13	16	24	27	192.86
9.	Other fruits	35	41	35	29	18	51.43

Source: Own calculation based on NIS, Tempo On-line Database, 2019

For cherries and sour cherries, although the average production recorded variations during the analyzed period (in 2017, 9 kg / tree represented the most average production for all the analyzed fruit-tree species), in 2018 14 kg / tree were also obtained, as in 2014.

As shown in Table 5, average prices of fruits sold in Bihor County increased in 2014-2018. Apricots had the highest growth (34.46%), followed by peaches, 29.49%, a fact also due to the decrease of the total production and of the average production.

Table 5

Average annual prices of fruits sold in the agri-food markets, in the Bihor County during 2014-2018, (lei / kg)

Nr. crt.	Category of fruits	2014	2015	2016	2017	2018	2018/2014 %
1.	Plums	2.5	2.54	2.52	3.36	2.85	114
2.	Apples	2.75	2.75	2.79	2.97	3.21	116.73
3.	Pears	4.92	4,55	4.88	5.21	5.13	104.27
4.	Peaches	3.73	3.77	3.9	3.86	4.83	129.49
5.	Cherries	7.06	6.65	7.88	8.12	7.74	109.63
6.	Sour cherries	5.34	5.06	5.71	6.5	5.74	107.49
7.	Apricots	4.15	4.92	5	4.27	5.58	134.46
8.	Nuts	8.04	9.29	7.13	8.8	9.12	113.43

Source: Own calculation based on NIS, Tempo On-line Database, 2019

In 2018, the highest average selling price was for nuts, 9.12 lei / kg and cherries, 7.74 lei / kg. Plums recorded the lowest price of 2.85 lei / kg.

Today, worldwide, there is a particular emphasis on the consumption of fruits and vegetables. Specialists recommend that one should eat more than 400 grams of fruits and vegetables per day (*Pirvutoiu I., Popescu A., 2013*).

CONCLUSIONS

Located in the historical region Crisana, Bihor County is one of the six counties that compose the North West Development Region.

Fruit growing is not the main branch of agriculture practiced in the County, although the development region of which it is part of, has the largest number of fruit trees in the country.

The orchards on fruit of the individual agricultural holdings held 98.92%, in 2018 out of the total area occupied by orchards. For the analyzed period there is a decrease of these surfaces.

The most cultivated fruit-tree species in bihor county is plum, although we notice a decrease in the number of these trees, as well as in the total number of fruit trees.

The total fruit production decreased by 5.04%, in 2018 compared to 2014. However, in the following categories there were increases: plums, nuts, cherries and sour cherries.

Between 2014-2018, average prices of fruits sold in bihor county increased. The apricots had the highest growth, followed by peaches and apples.

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REFERENCE POINTS AND TEACHING INSTRUMENTS IN THE TEACHING-LEARNING ACTIVITY

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ABSTRACT

The construction of the training strategies is done starting from the education policy , from the needs of the pupils training and professional development of the teacher, their application having a specific context : the school culture and the access to the modern communication and informational means. In the development and application of the training strategy , as in any strategy , the strategic analysis (social and school context, expectations of the beneficiaries , at local level - students, parents, employers - and resources available in material plan, psychological, content); strategic choice (conditioned by opportunities, evaluation, decision); strategic implementation (which involves planning , organization and change).

The training strategies are defined and adapted following the strategic options of implementing the curricular reform, in the sense of promoting the educational policy at the level of school institution, but also in relation to the methodological concept of each teacher. An innovative teaching-learning-assessment system is based today on a modern conception of learning and a set of IT equipment and tools. At the same time, the system relies on the concept of integrated curriculum and on inter- or transdisciplinary educational approaches, oriented by competences specific to the knowledge society. The specialists in the education sciences state that it is necessary to focus the training on the students ' acquisition / final results , with an emphasis on competences (correlates with all forms of education) and attitudes, by emphasizing the action dimension in forming the personality of the students. However, experts and the researchers and educators level support that organization of the education offer must be built against the interests, skills, expectations of the beneficiaries (students, parents, employers) and the expectations of society. The strategy is a unitary structure of efficient pedagogical functioning that involves an articulated set of decisions aimed at adapting the methods, means and forms of organization of learning to a specific educational situation .

KEY WORDS：strategy, training, reform , education, skills, methods, training **.**

INTRODUCTION

According to D. Potolea , the strategy is a specific and superior form of the pedagogical normativity, which ensures the instructive-educational activity internal coherence, compatibility with the objectives and the complementarity of the effects. Teaching strategies do not fully coincide with learning strategies, because students learn and independently of teaching leadership through teaching. It should be noted that an active pedagogy involves the involvement of students, from a certain age, but as early as possible, in the option for a certain teaching strategy, starting from proposals of the teacher. According to Ioan Neacşu , teaching strategies require flexible switching between the teacher's and the student's actions, between the modes of organization: frontal, group and individual, the combination of methods, means, practical principles . The general

orientation of the strategy is determined by the emphasis placed on learning , not on the aspect of teaching .

MATERIAL AND METHOD

The use, mainly, of didactic strategies of interactive- participative and metacognitive type places the one who learns in the center of the instructional-educational process, stimulating him to be effectively involved in the development of the theoretical and applied activities, valuing his spirit of, tolerance of opinions, beliefs colleagues, developing capacity cited self-evaluation; strategies for active interaction between participants in the activity (student-student, student-teacher). initiative, independence and creative potential, demanding its investigative capabilities .

The use of strategies that lead to metacognitive skills and an intrinsic, positive motivation creates the premises for students to be able to achieve a conscious, autonomous, systematic learning. Interactive didactic strategies , as group strategies, involve the collaborative work of the students organized on microgroups or work teams , in order to achieve the expected objectives; it is based on mutual support; stimulates the individual participation by chance; and the effort to adapt to group norms

RESULTS AND DISCUSSION

The strategies are constructed starting from the types / characteristics of the learning :

- learning by passive reception / listening (logocentric model);
- learning about discovery, empirically, factually (empirical model);
- learning through direct practical action, from experience (experiential model);
- game learning (simulation);
- learning through experimentation, repetition or imitation.

The strategies based on the research action are based on the notion of problem-situation and problem-solving. A problem can be defined as an obstacle or a cognitive difficulty that involves an unknown (or more) and to which the repertoire of responses gained in previous experience appears insufficient or inadequate .

The differentiated training strategies have as a priority the activity in the group that you know several variants, of which we can list:

a) the identical activity for all the members of the group;

b) differentiated activity with the addition of identical tasks;

c) activity imposed by dividing a more complex theme into simpler and easier topics to be approached by children;

d) activity in which each group deals with a precise way of approaching the problem, etc.

The groups may be *homogeneous* in relation to the component (with students having a similar level of performance) or they may be *heterogeneous* groups , the students being different in terms of performance level . Important are , in one case and another , mutual collaboration , acceptance of the other and fairness of the results.

The group makes a significant contribution to educating creativity, socializing and structuring the intellectual activity optimally.

The concrete forms of differentiation involve : individual activities and individualization of training sequences ; activities in small groups, of 2-5 members, homogenized groups with relative stability, with variable working time , so as to avoid "stigmatizing" some or, on the contrary , overestimating others; training and exercise programs, with objectives and methodologies negotiated beforehand, with individualized content; self-taught learning , individual training path within distance education .

A special situation is presented by the gifted children and young people for whom accelerated forms of training are needed , which means early admission ; obtaining credits for school entrance examination ; individual studies by correspondence, etc.

Getting students to use *reflection strategies* on their own learning means, in a certain sense, a step towards self-knowledge, that must be self-research, for development and fulfillment. Reflection on the water review, plan, improve and control / regulate own their cognitive mechanisms cause increased take some metacognitive strategies, in other words , strategies that followed specific objectives: capacitaty to anticipate the results of thr actions; the ability to analyze causes, effects, contexts; the ability to evaluate their own efforts; the ability to learn from the wrong ; the peace of transferring acquisitions, meanings in new situations; that the water of being able to work independently and learn from one's own mistakes, without discouraging oneself, counting mistakes , as a resource in learning, etc. ,Taking points of view and of the various solutions etc.

The *metacognitive* strategies aim at both learning planning and the dose of time or effort, as well as the awareness of their own limits, by correctly evaluating their own results, in relation to the objectives.

Essentially, the methods of teaching and learning methods devotion or learn teaching methods has -evaluation, its curricular sense, can be considered practical ways to use teaching methods and techniques of education, organizational and conducting the educational-educational activity.

The didactic process can be defined as element of detail, sequence of the method, particularization of it, component of it, corresponding to an operation to be performed , within the application of the method.

The combination of procedures, their quality and nature, their functionality as a whole using a teaching method determines , in the most direct way , the efficiency of the method.

The notion of *methodology* has at least two meanings:

a) all the methods used in the educational process, structured on the basis of a unitary pedagogical conception;

b) the science that studies the nature, functions and status of the educational methods, discovering, from a dynamic and open perspective, the principles of their effective use. The term of *technology* tries to answer the question *how to proceed* , *what methods to use in order to achieve maximum efficiency of the educational process* , technology is defined as a set of teaching tools and techniques along with ways to use them.

The active-participatory method , introduced in the pedagogy of the *active school* paradigm , centered on the student and his / her interests of knowledge , mobilizes the energies of the learner / training, emphasizes the process and not the product of knowledge. This method is seeked and involves a knowledge *conquered* student.

The interactive methods , in turn, focus on the educational interaction and take solutions and techniques specific to other fields than traditional school training (communication techniques, training of trainers and management, creativity stimulation, group techniques, etc.), the diversification produced taking, for example, the form of the *Phillips 6/6* process , *ice breaking* games , *focus group* technique , *interactive listening* , etc., methods mainly used in the activity with adolescent students and in adult teaching .

The pedagogy ***classical*** *surrender* first *theory* and then built *situation problem* , while pedagogy ***modern*** takes as its starting point *the situation problem* - starting from her presentation of information.

The main directions for the modernization of the methods are: enlargement, diversification of the repertoire of methods and procedures (a *quantitative* extension), instrumentalization and technicalization of the methodology, preparation for lifelong learning.

Priority directions for the renewal of the methods are also considered: in the sense of a differentiated pedagogy , of an education, as well , the individualization of the methods; customizing learning conditions; selecting methods by objectives we formative that visa ase intellectual capabilities; cognitive attitudes, thinking qualities , a certain way of thinking freely, openly, autonomously; understanding the student as an active partner, co-participant , co-author of his own training; consulting students in choosing and using methods; highlighting the full cognitive

potential of the student, based on formative diagnosis; gradual empowerment of students by encouraging independent, creative work; the emphasis placed on learning, not teaching, in the spirit of a reform of Romanian education; acquiring, conquering a *science from experience* , by capitalizing on the informal experience of the student, as well as the non-formal one, through independent exploration, spiritual autonomy; encouraging teamwork, cooperative learning, appreciation of work; organization of learning conditions by a teacher , counselor, facilitator; the focus on developing the intrinsic motivation of learning , the *joy of knowing* and the *pleasure of learning* ; the construction of the intellectual activity of the student.

In this regard, it can be appreciated that the methodology is constantly enriched, especially by the valuable contributions of some researchers in the education sciences, by the innovations promoted by the best teachers or by the theoretical contributions of renowned educators, etc.

Depending on the specific teaching disciplines is used, there are various methods wich were inspired by intergroup communication techniques, social psychology or the social and human sciences-specific methodologies.

For example, for the teaching of the Romanian language, it can be used in specific combinations: the double entry journal, the triple entry journal, the author's chair, the synelg (I know - I want to know - I learned), rotary, pyramid discussion, puzzle, gallery tour, early reading, mosaic, project, cube, VENN, tour in chess, portfolio, investigation, *quintet* , *horoscope* , *clusters* , *thinking hats* , inspired by the specific methodologies of the trainers training.

The reading journal with double or triple entry is an individual work tool of the student by which the capacity for reflection can be encouraged and stimulated. In the case of the double entry, there are two sections: on one side a text is transcribed or text fragments are selected that have aroused their interest, which they liked or disliked, etc., and in the other I write personal comments on the respective fragment.

The three-section journal includes: personal comments, ideas for lessons or discussions and questions for teachers.

The Sinelg implies the adoption of a learning guide: what the student remembers about a certain concept or a certain situation / problem; what he would like to know; what was new at the end of the lesson / activity.

Depending on the particularities of the object of education can achieve *classification methods* which are fit to content specifically is:

a) methods for oral communication Methods shows - DESCRIPTION, explanation, the arguments, the exposure of the opponent, lecture , discussion of , story of, training of

foundation; the method of essays; interrogative methods: conversation, heuristic and catechetical conversation, problematization; the method of discussions and debates;

b) methods of written communication: reading, as a technique of information and documentation, reading and interpreting the biblical text, the report, etc .

c) m action methods: exercise, teaching game, learning through dramatization (carols, choir, religious plays), learning by researching vestiges, documents (visits to monasteries, churches).

The case study is also a method of active learning and learning, which allows direct confrontation with a real situation , having a great heuristic and applied value , a special training role; involves capacities for critical examination of the different strategies and variants for solving real cases, from everyday life.

To collect data are used: study of files, archives, interview, questioning of specialists, those who were present (assisted, witnesses of what happened and can provide an image of what was really), document study: letters , denominations, and biographical

CONCLUSIONS

Into an training activty oriented by constructivism, the effective evaluation of training strategies targetst the capacity of investigation and the capacity of conceptualization, the ability to solve problems, thinking ability, capacity evaluation and especially self-evaluation .

The lesson remains, at least for now, the main way of organizing and carrying out the didactic activity, an authentic pedagogical microsystem, which reproduces the image of the educational process as a pedagogical macrostructure.

The diversification of the teaching-learning strategies evaluation can be realized only if the focus is on transforming the learner into the subject of the training, independent explorer of the real and / or virtual environment and constructor of the learning.

Open learning environment, its diverse and rich in resources, complete the picture.

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FAUNISTICAL DATA FROM THE WESTERN PART OF ROMANIA DURING 2019

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Abstract.
This paper present the faunistical researches from the western part of Romania, during 2019. There were presented some faunistical and ecological data, unpublished in literature (phenological anomalies, the size of the clutches, additional yearly clutches, chromatic varieties, rare or accidental species).

Key words: faunistical data, Romania.

INTRODUCTION

The dissapearance of species or the diminution of their population,the emergence of new species either accidental in a territory,insuficient faunal data,observing some ecological aspects not published in the scientific literature are just a few reasons that make it absolutely necessary to publish the faunal data observed in nature. Data about the fauna from the western part of Romania area were published by Ilie (2011, 2015, 2017).

MATHERIAL AND METHOD

The insects were collected with the entomological net.For the identification of species were used different sources (Warchalowski, 2003; Pîrvu et al., 1985; Hoeher, 1973; Valenciuc, 2002; Fuhn et al., 1961; Dijkstra, 2006; Svensson, 2017).

RESULTS AND DISCUSSIONS

During 2019 , were identified the following species:
The Gastropoda Class
- *Helix lucorum* Linnaeus, 1758-one specimen, Oradea(BH), June 11. Relatively common species in Romania.
- *Helix pomatia* Linnaeus, 1758-one specimen, Tinca(BH), September 16. Common species at national level.
The Insecta Class
The Coleoptera Order

-*Clytra laeviuscula* Ratzeburg, 1837 - one female specimen, Oradea(BH), May 21. Common species in Romania.
-*Galeruca tanaceti* Linnaeus, 1758 - one female specimen, Oradea(BH), September 29; one female, Tinca(BH), October 5, one femele specimen feeding on spicules and seeds of *Agropyron cristatum* Linnaeus, 1758, Tinca(BH), October 12. This is an accidental host plant species for this species. Common species in Romania.
The Lepidoptera Order
-*Inachis io* Linnaeus, 1758-one specimen, Leș(BH). July 30; one specimen, the edge of Tinca forest(BH), October 12. Common species at national level, but more rarely in this year.
-*Vanessa atalanta* Linnaeus, 1758-one specimen, Tinca(BH), September 18, 24, 29; one specimen, Tinca(BH), October 2, 5 and 12 (the edge of Tinca forest-BH), 17(Tinca-BH). Very common in Romania, but rare in this year.
-*Oclodes sylvanus* Esper, 1777-one male specimen, Oradea(BH), May, 21. Relatively common species in Romania.
-*Papilio machaon* Linnaeus,1758 - one specimen, Leș(BH), July 30. Relatively common species in Romania, but rare in this year.
-*Lycaena dispar rutila* Werneburg,1864 - one female specimen, Leș(BH), July 30. Relatively common species in Romania, but protected at national level.
-*Hyles euphorbiae* Linnaeus, 1758 - one specimen, Tinca(BH), September 24, 30. Common species in Romania.
-*Vanessa cardui* Linnaeus, 1758 - five male specimens, Oradea(BH), June 11; two specimens, Tinca(BH), October 8. Frequent species in 2019, common species in Romania.
-*Pieris brassicae* Linnaeus, 1758 - rare specimens during April-May because the rains, relative many specimens during June-August in all western part of Romania. Common species in Romania.
-*Macroglossum stellatarum* Linnaeus, 1758 - one specimen, Tinca(BH), September 24, 30. Migratory species in Romania, sometimes relatively common species in Tinca area, during August-September.
-*Colias erate* Esper, 1803 – one male specimen, Tinca(BH), October 4 and 7; many specimens, the edge of Tinca forest(BH), October 12. Relatively common species in Romania. It is noted that the flight period is extented by one month (Rakosy, 2013).
-*Cupido alcetas* Hoffmannsegg, 1804 - one female specimen, Tinca (BH), October 4. Almost endangered species in Romania (Rakosy, 2013).
-*Maniola jurtina* Linnaeus, 1758 - one specimen, Tinca (BH), October 5. Common species in Romania.

-*Plebejus argus* Linnaeus, 1758 - one male specimen, Tinca (BH), October 7. Common species in Romania. According to literature (Rakosy, 2013), it is noted that the flight period is extented by one month.
-*Lasiommata megera* Linnaeus, 1758 - two male specimens, Tinca (BH), October 7. Common species in Romania.
-*Issoria lathonia* Hubner, 1819 - two male specimens, Tinca(BH), October 8, 12. Relatively common species in Romania.
-*Colias croceus* Fourcroy, 1785 - one female specimen, Tinca (BH), October 8; many specimens, the edge of Tinca forest (BH), October 12. Common species at national level, but relatively rare in this year.
-*Argynnis paphia* Linnaeus, 1758 - one male specimen, Tinca(BH), October 11. Common species in Romania.
-*Argynnis adippe* Dennis et Schiffermuller, 1775 - two specimens, the edge of Tinca forest (BH), October 12. Common species in Romania. It is noted that the flight period is extented by almost two monhs (Rakosy, 2013).
-*Lycaena phleas* Linnaeus, 1758 - many specimens, the edge of Tinca forest(BH), October 12. Common species in Romania.
-*Brenthis daphne* Bergstrasser, 1780 - one male specimen, the edge of Tinca forest (BH), October 12. Relatively common species in Romania, it is noted that the flight period is extented by two months (Rakosy, 2013).
The Odonata Order
-*Sympetrum sanguineum* Muller, 1764 - one male specimen, Tinca (BH), October 7. Generally, common species in Romania. Flight season: April-August, although some may persist well into November (Dijkstra, 2006).
-*Aeshna mixta* Latreille, 1805 - one male specimen, the edge of Tinca forest (BH), October 13. Relatively common species in Romania, flight season: April-September.
The Mantodea Order
-*Mantis religiosa* Linnaeus, 1758 - one green female specimen, Tinca(BH), October 16; one brown female specimen, Tinca(BH), October 17. Common species in Romania.
Pisces Class
-*Tinca tinca* Linnaeus, 1758 - one specimen,Tăut (BH), Crișul Negru river, September 26. Very rare species in Romania.
Amphibia Class
-*Hyla arborea* Linnaeus, 1758 - one male specimen singing, Tinca (BH), September 13, 18, 24, 28, 29; October 1, 13.Common species in Romania.
-*Salamandra salamandra* Linnaeus, 1758 - one specimen, Ucuriș(BH), April 10. Common species in hilly and mountainous areas from Romania.
Reptilia Class
-*Lacerta viridis* Linnaeus, 1758 - one male specimen, Tinca forest(BH), October 12. Common species in Romania.

-*Lacerta agilis* Linnaeus, 1758 - two specimens, the edge of Tinca forest (BH), October 12. Common species in Romania.

Aves Class

-*Circaetus gallicus* Gmelin,1788 - one specimen, Drobeta Turnu-Severin (MH), September 12. Summer visitor, species became relatively rare at national level.

-Buteo buteo Linnaeus,1758 - ten specimens observed along Salonta (BH) – Craiova (DJ) route, September 11; one specimen, Leș(BH), September 29. Common species in Romania.

-*Falco tinnunculus* Linnaeus, 1758 – two male specimens, Salonta(BH); one male specimen, Vinga (TM); one female specimen, Timișoara (TM); one male specimen, Ciumeghiu (BH), September 11; one male specimen, Oradea (BH), September 29. Relatively common species in Romania.

-*Phylloscopus collybita* Vieillot, 1817 - one male singing, Tinca (BH), September 18. Summer visitor, relatively common species in Romania.

-*Athene noctua* Scopoli, 1769 - one pellet, L=5cm, l=1.5cm, contained beans of *Apodemus sylvaticus* Linnaeus, 1758 and remains of little coleopterans, Tinca(BH), September 19. Common,sedentary species in Romania.

-*Phasianus colchicus* Linnaeus, 1758 - three eggs and two nestlings, Aleșd (BH), August 25. Probably, this is the third yearly generation, observed by Ilie even in Tinca area (BH) but in September-November in the last years. Common,sedentary species in Romania.

-*Mergus serrator* Linnaeus, 1758 - one male specimen, Tinca (BH), Crișul Negru river, September 19. Surprising the presence of the species at this date, being winter visitor at national level.

-*Netta rufina* Pallas, 1773 - one male specimen, Tinca (BH), Crișul Negru river, September 19. Summer visitor, rarely in winter in Romania.

-*Falco vespertinus* Linnaeus, 1766 - one female specimen, Tinca(BH), September 18. Summer visitor,relatively rare species in Romania.

-*Delichon urbica* Linnaeus, 1758 - one specimen (probably the last of this year), Tinca(BH), September 21. Summer visitor, common species in Romania.

-*Corvus corax* Linnaeus, 1758 - one pair, Tinca(BH), September 21; one male specimen, Tinca(BH), October 5; one pair, Tinca forest (BH), October 12. Sedentary, relatively common species in Romania.

-*Anser anser* Linnaeus, 1758 - one female specimen with three goose bumps, Oradea (BH), September 12. In this case this is an additional clutch (the second), unmentioned in the scientific literature. Partial migratory species in Romania.

-*Carduelis cannabina* Linnaeus,1758 - one pair, Tinca (BH), September 21. Partial migratory, relatively common species in Romania.

-*Panurus biarmicus* Linnaeus, 1758 - five male specimens, two female specimens, Tinca (BH), September 21. Sedentary species in Romania.
-*Cygnus olor* Gmelin, 1789 - two immature specimens, Drobeta Turnu-Severin (MH), Danube river, September 11; one adult specimen, the same place, September 14. Partial migratory species at national level.
-*Phalacrocorax pygmaeus* Pallas, 1773 - three specimens, Drobeta Turnu-Severin-MH (Iron Gates), September 14. Summer visitor, rarely in winter in Romania.
-*Phalacrocorax carbo* Linnaeus, 1758 - two specimens, Drobeta Turnu-Severin(MH), Danube river, September 14; one specimen, Tinca (BH), September 30; seven specimens, Tinca (BH), October 12. Summer visitor, rarely in winter at national level.
-*Larus ridibundus* Linnaeus, 1766 - many immature and adults along the Danube river, on Orșova-Drobeta Turnu-Severin route (MH), September 11-14. Partial migratory species.
-*Tachybaptus ruficollis* Pallas, 1764 - one specimen, Drobeta Turnu-Severin-MH (Iron Gates), September 14. Summer visitor, rarely in winter in Romania.
-*Falco columbarius* Linnaeus, 1758 - one male specimen, Tinca (BH), September 4. Surprising the presence of the species at this date, being winter visitor at national level.
-*Columba palumbus* Linnaeus, 1758 - one adult and four juvenile specimens, Oradea (BH), September 16, near Peța rivulet. In this case this is the fourth yearly generation unmentioned than in the book of Hoeher (1973) who mentions this clutch in September. Probably the clutch was deposited at the end of August.Generally, the number of eggs is two, rarely one or three (in this case, this clutch presented four eggs,case unmentioned in the scientific literature).
-*Podiceps cristatus* Linnaeus, 1758 - one male specimen, Miersig lake(BH), September 22. Summer visitor in Romania.
-*Hirundo rustica* Linnaeus, 1758 - 21 specimens (probably northern specimens being in migration), Tinca (BH), September 24; twenty juvenile specimens (probably northern specimens), Tinca (BH), September 30. Summer visitor, common species in Romania.
-*Accipiter brevipes* Severtzov, 1850 - one male specimen, Cheșa (BH), September 25; one male specimen, Tinca (BH), October 13. Summer visitor, relatively rare species in Romania.
-*Certhia familiaris* Linnaeus, 1758 - one specimen, Belfir (BH), September 25. Sedentary species, relatively common species in deciduous forests from Romania.
-*Oriolus oriolus* Linnaeus, 1758 - one male specimen, Cheșa (BH), September 24; one male specimen, Râpa (BH), September 26; one male

specimen, Tinca spa (BH), October 3. Summer visitor, relatively common species in Romania.
-*Parus cyanus* Pallas, 1766 - one specimen, Cociuba Mare forest (BH), September 26; one specimen, Râpa (BH), October 3. Winter visitor (surprising the presence of the species at this date!), accidental,very rare species in Romania.
-*Aegypius monachus* Linnaeus, 1766 - one immature specimen, Belfir (BH), September 26. Accidental, very rare species in Romania.
-*Parus cristatus* Linnaeus, 1758 - two specimens, Brad (AB), September 26. Sedentary, common species in the mountains areas from Romania.
-*Accipiter nissus* Linnaeus, 1758 - one juvenile specimen, Tinca (BH), September 24, 27 and Belfir (BH), October 13. Sedentary, common species in Romania.
-*Parus ater* Linnaeus, 1758 - four specimens, Râpa (BH), October 2. Sedentary, relatively common species in the hilly areas of Romania.
-*Eremophila alpestris* Linnaeus, 1758 - one male specimen, Belfir (BH), October 1. Summer or winter visitor, relatively common species in the mountainous areas of Romania.
-*Ficedula hypoleuca* Pallas, 1764 - one male specimen, Tinca (BH), October 2. Summer visitor, rare species at national level.
-*Sturnus roseus* Linnaeus, 1758 - two specimens, Râpa (BH), October 1. Summer visitor, relatively rare species in Romania.
-*Accipiter gentilis* Linnaeus, 1758 - one female specimen, Tinca (BH), October 5. Sedentary,common species in Romania.
-*Platalea leucorodia* Linnaeus, 1758 - one specimen, Tinca (BH), Crișul Negru river, October 3. Summer visitor, relatively common species in Romania.
-*Phoenicurus phoenicurus* Linnaeus, 1758 - breeding species inside the Râpa village, during 2018-2019. Summer visitor, relatively common species in the deciduous forests from Romania.
-*Grus grus* Linnaeus, 1758 - one specimen, Măgești (BH), October 5. Passage species and winter visitor at national level.
-*Coccothraustes coccothraustes* Linnaeus, 1758 - one specimen, Tinca (BH), October 8. Sedentary, common species in the deciduous forests from Romania.
-*Hippolais icterina* Vieillot, 1817 - one specimen, Tinca (BH), October 8; one specimen, Tinca forest (BH), October 12. Summer visitor, relatively common species in the plain areas from Romania. Probably,this is the latest mention for this species in Romania.
-*Anas plathyrhynchos* Linnaeus, 1758 - 62 specimens, Tinca (BH), October 8. Sedentary, common species near waters in Romania.

-*Aythya nyroca* Guldenstadt, 1770 - one female specimen with five duck buds, Cheșa(BH), Crișul Negru river, October 8. This is the second yearly clutch, unmentioned in the scientific literature. Summer visitor, rarely in winter in Romania, near waters.
-*Luscinia svecica* Linnaeus, 1758 - one male specimen, Tinca (BH), October 8. Summer visitor or passage species in Romania.
-*Hirundo daurica* Laxmann,1769 - one specimen, Belfir(BH), October 9. Summer visitor, rare species in Romania.
-*Plectrophenax nivalis* Linnaeus, 1758 - one female specimen, Tinca (BH), October 7. Surprising the presence of this species at this date, being winter visitor (probably,this is the earliest mention for this species in Romania!).
-*Carpodacus erythrinus* Pallas, 1770 - one male specimen, Râpa(BH), October 8. Summer visitor, relatively rare species in Romania.
-*Coturnix coturnix* Linnaeus, 1758 - one specimen, Cheșa(BH), October 10. Sedentary, common species in the plain areas from Romania.
-*Alauda arvensis* Linnaeus, 1758 - one specimen, Cheșa (BH), October 10. Partial migratory species, common in the plain areas from Romania.
-*Sylvia curruca* Linnaeus, 1758 - one male specimen, Tinca (BH), October 10; one male specimen, Cheșa (BH), October 12. Summer visitor, relatively common species in the hilly and plain areas from Romania.
-*Troglodytes troglodytes* Linnaeus, 1758 - one specimen, Tinca forest (BH), October 12. Summer visitor, rarely winter visitor, common species in the deciduous forests from Romania.
-*Turdus pilaris* Linnaeus, 1758 - four specimens, the edge of Tinca forest (BH), October 12. Sedentary or winter visitor, relatively common species in Romania.
-*Parus major* Linnaeus, 1758 - one specimen with entirely yellow abdomen (without the characteristic black spot, being no juvenile specimen), the edge of Tinca forest (BH), October 12. Sedentary,common species in Romania.
-*Parus montanus* Baldenstein, 1827 - two specimens, the edge of Tinca forest(BH), October 12. Sedentary, common species in the mountainous areas from Romania.
-*Hippolais pallida* Ehrenberg, 1833 - one specimen, Oradea (BH), October15. Summer visitor in Romania, this is the latest mention for this species in Romania.
-*Buteo rufinus* Cretzschmar, 1829 - one specimen, Cheșa (BH), October 14. Summer visitor or passage species in Romania.
-*Tarsiger cyanurus* Pallas, 1773 - one male specimen, Cociuba Mare (BH), October 14. Passage species or rarely winter visitor,very rare species in Romania.
-*Pernis apivorus* Linnaeus, 1758 - one specimen, Cheșa (BH), August 15. Summer visitor,relatively rare species in Romania.

-*Gyps fulvus* Hablitz, 1783 - one immature specimen, Belfir (BH), October 11. Accidental, very rare species in Romania.
-*Erithacus rubecula* Linnaeus, 1758 - one specimen, Râpa(BH), October 14. Summer visitor or rarely winter visitor, common species in the deciduous forests from Romania.
-*Phalaropus lobatus* Linnaeus, 1758 - one specimen with winter plumage, Tinca(BH), Crișul Negru river, October 12. Passage, rare species in Romania.
-*Streptopelia decaocto* Frivaldszky, 1838 - one broken egg, Tinca (BH), October 16. This egg belongs to the sixth yearly clutch, confirming again the observations of Ilie in Tinca area in the last years. Sedentary, very common species in Romania.
-*Motacilla cinerea* Tunstall, 1771 - three specimens, Tinca (BH), October 17. Summer visitor, rarely in winter, relatively common species in the mountainous areas from Romania.
Mammalia Class
-*Rhinolophus ferrumequinum* Schreber, 1774 - four specimens, Tinca(BH), September 22-24; two specimens, Tinca(BH), September 29; three specimens, Tinca(BH), October 1. Common species in Romania.
-*Pipistrellus pipistrellus* Schreber, 1774 - one specimen, Tinca(BH), September 23-25; one specimen Tinca(BH), October 1, 9. Common species in Romania.
-*Mustela nivalis* Linnaeus,1758-one excreta, L=2.5cm, l=2.2mm, contained remains of little coleopterans, Tinca(BH), September 22. Common species in Romania.
-*Talpa europaea* Linnaeus, 1758-one specimen, Leș(BH), September 29. Common species in Romania.
-*Vulpes vulpes* Linnaeus, 1858-one male specimen, 100% black (melanistic specimen), Cheșa(BH), August 16. This chromatic variety is very rare in nature. Common species in Romania.
Legend: BH-Bihor county, MH-Mehedinți county, DJ-Dolj county, AR-Arad county, TM-Timiș county; AB=Alba county.

CONCLUSIONS

During 2019 in the western part of Romania were recorded 98 species belonging to seven classes and 84 genera. There were obtained ecological data of these species ,some of them unknown in the scientific literature about phenological anomalies,additional yearly clutches,the size of the clutch, chromatic varieties. Frequent species of butterflies in 2019 in the western part of Romania: *Vanessa cardui* L.

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STUDY ON THE PRODUCTION AND MARKETING OF SUNFLOWER SEEDS IN THE CENTER REGION

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Abstract

The present paper highlights the main aspects regarding the production and marketing of sunflower seeds in the Center Region of Romania. At present, a special emphasis is placed on the production of sunflower seeds, as they have a double importance. Sunflower seeds provide, on the one hand, a significant share for the animal feed, and on the other hand they are used for human consumption. According to studies conducted sunflower seeds contain a number of vitamins necessary for the human body. In order to carry out a study as realistic as possible, the most appropriate indicators were analyzed, such as: the areas cultivated with sunflower seeds; total production of sunflower seeds; average production per hectare of sunflower seeds; prices for sunflower seeds. The analyzed indicators targeted the Center Region of Romania for the period 2012-2017. The statistical data used in this research were provided by the National Institute of Statistics.

Key words: commercialization; sunflower seeds; total production of sunflower seeds; prices; Center Region

INTRODUCTION

Sunflower comes from the Central and North America, being part of the Order Compositales, the Compositae family and the genus Helianthus1 L. In Romania, sunflower represents an oil plant that has a high degree of spread in the territory. The most significant surfaces cultivated with sunflower are found especially in the Romanian and Western Plains, as well as in Dobrogea *(https://www.agro.basf.ro/ro/stiri/fermier-in-romania/cultura-de-floarea-soarelui-toate-informatiile-de-care-ai-nevoie.html).*

At present, the sunflower represents a plant with many uses such as: feeding the population; feeding animals; industry. Worldwide, plants such as sunflower, rapeseed, hops, soybean and sugar beet present a wide range of uses in the food industry in order to obtain various and high-quality products for human consumption (*Chiurciu I. A., 2015), (Dona I., 2015) (Soare E., et al., 2018).*

It is necessary to specify that the sunflower oil also presents energetic uses. It can be used as an additive or a substitute for fuel, especially due to the physical properties equivalent to those of the diesel fuel *(https://www.pestre.ro/blog/floarea-soarelui-de-la-plantare-la-recoltare/#Importanta_culturii_de_floarea_-_soarelui).*

In Romania, the sunflower is the most important plant for the honey production that is characterized by: increased number of flowers on the inflorescence and a good secretion of nectar (*Stefan V., et al., 2008).*

In addition to the many uses that have been highlighted for sunflower, the aspects that make this crop plant attractive to farmers have been identified. Of these, we specify two key aspects that directly contribute to increasing the profitability of the sunflower culture: total mechanization and low costs per hectare compared to other crops, which at the end of the season are sold at very close prices, (*Soare E., Chiurciu I.A. 2018).*

MATERIALS AND METHODS

The present study analyzed a series of indicators that best reflect the evolution of the sector of production and marketing of sunflower seeds in the Center Region. The indicators analyzed in this study are: the areas cultivated with seeds in the Center Region; global production of sunflower seeds; average production per hectare of sunflower seeds; prices for sunflower seeds. The statistical data used in the present research were taken from the National Institute of Statistics. The period for which the current study was conducted was 2012-2017. The present study was based on a series of books, articles, statistical data that provided a series of information regarding the production and marketing of sunflower seeds. The most important information on the one hand, are presented in the current research, and on the other, the citations related to the materials that provided the information can be found.

RESULTS AND DISCUSSION

Surface cultivated with sunflower. The surface cultivated with sunflower in the Center Region recorded changes during the analyzed period (see fig. 1). In 2012, the smallest area cultivated with sunflower in this region was registered, of 5,455 ha. In 2013, there was a significant increase of 50.8%, compared to 2012. In 2014, compared to 2013, there was an increase in the area cultivated with sunflower (+ 16.0 hectares). In 2015, compared to 2014, the cultivated area decreased (-217.0 hectares). In 2016, compared to 2015 the area with sunflower increased by 8.44%. In 2017, in the Center Region the area cultivated with sunflower reached the maximum level (11,367 hectares) during the analyzed period. In 2017, compared to 2012, the cultivated area increased by 108.3%. The oscillation of the cultivated areas with the sunflower in this region was due, especially to the interests of the farmers.

In the Center Region, in 2017, 1.14% of the area cultivated at national level could be found. From the data presented, it can be easily observed that in this region a small area is cultivated with sunflower, compared to the areas cultivated in the other development regions. This region has a low degree of favorability for the sunflower culture. At the national level, in 2017, 998,415 hectares were cultivated with sunflower, which placed Romania at the top of the ranking of sunflower cultivating countries at European Union level.

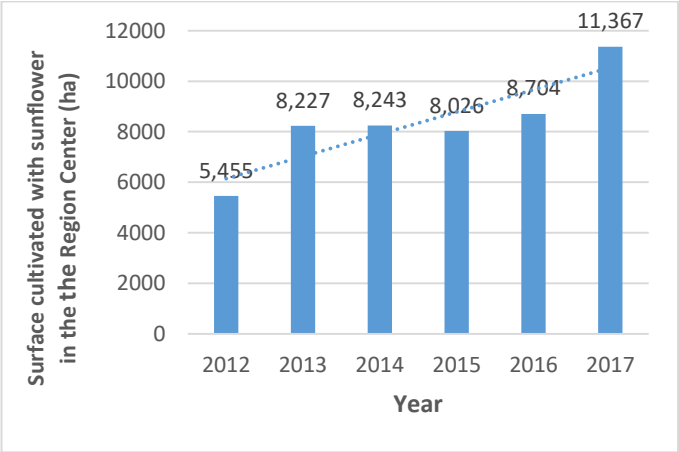

Fig. 1. Dynamics of the surface cultivated with sunflower in the Center Region, between 2012-2017 (hectares)

Source: Own graphic based on the data from the National Institute of Statistics, 2019

Regarding the areas cultivated with sunflower in the counties from the Center Region, they have registered changes from year to year (see fig. 2). It is necessary to specify that the county of Mures has the largest areas with sunflower. In 2017, in this county was registered the largest area cultivated with sunflower, of 5,770 ha. The area cultivated in this county in 2017, represented 50.8% of the area cultivated in the Center Region. In Alba county the cultivated areas ranged between 1,683-4,680 ha. In Sibiu county, the largest area with sunflower was 1,173 ha (2013). In 2016, in the county of Brasov was registered the largest area with sunflower, of 228 ha. In Covasna county, in 2016, the smallest area cultivated with sunflower was registered, of only 6 hectares.

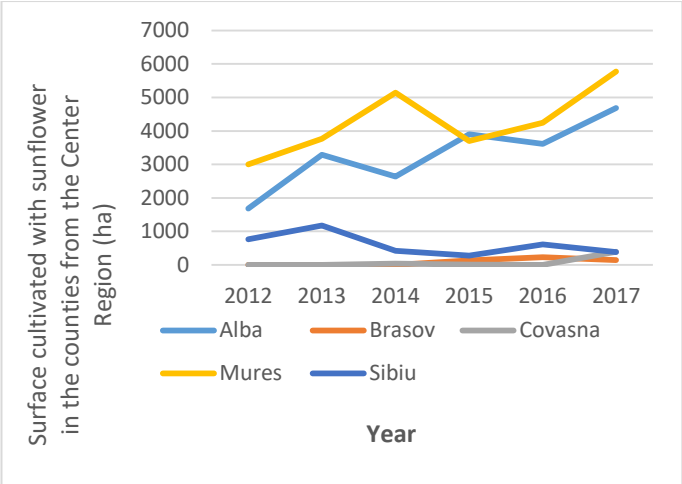

Fig.2. Dynamics of the surface cultivated with sunflower in the counties from the Center Region, between 2012-2017 (hectares)

Source: Own graphic based on the data from the National Institute of Statistics, 2019

Production of sunflower seeds. Sunflower seeds production in the Center Region between 2012-2017 recorded oscillations from year to year (see fig. 3). The highest production was 30,975 tons (2017). This increased production was due on the one hand, to the cultivated areas and on the other, to the yields achieved per hectare *(Lilea C.P.F., et al. , 2018).*

The production of sunflower seeds in 2017 represented 1.06% of the national production. In 2017, in the Center Region the total production of sunflower seeds increased by 315.9%, compared to 2012. At the opposite pole, the lowest production of sunflower seeds was recorded in 2012 (7,448 tones). This reduced production was in close correlation with the number of hectares cultivated with sunflower, in 2012.

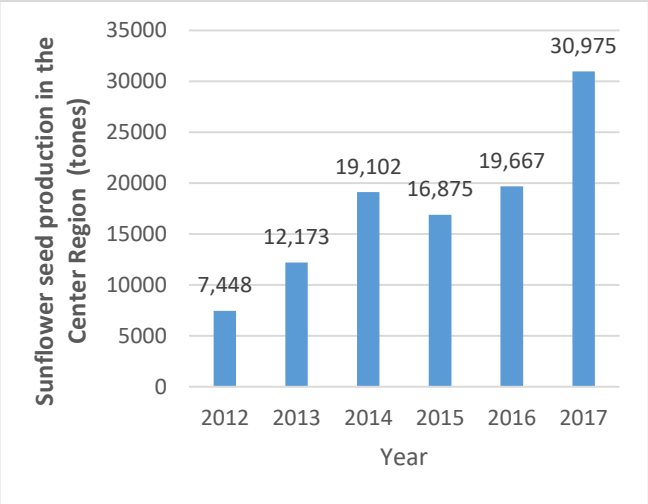

Fig.3. Dynamics of sunflower seed production in the Center Region, between 2012-2017 (tones)

Source: Own graphic based on the data from the National Institute of Statistics, 2019

In the counties from the Center Region the production of sunflower seeds in the period 2012-2017 has changed from year to year (see fig. 4). These changes were due to both the sunflower cultivated surfaces and the climatic factors. As expected, during the period under analysis in Mures County, the most significant sunflower seed production was recorded. In 2017, the maximum point of sunflower seed production at the county level of 17,064 tones was reached.

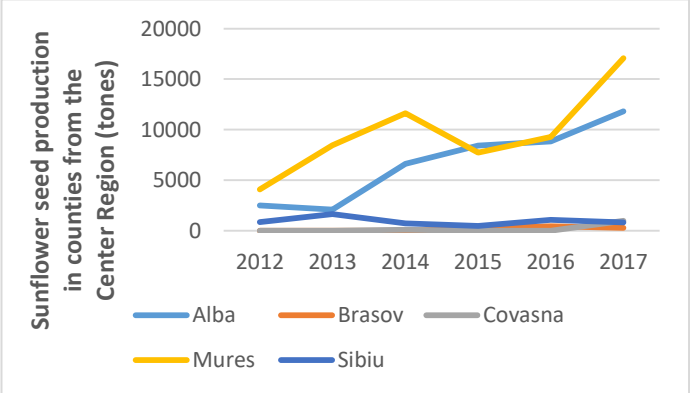

Fig.4. Dynamics of the sunflower seed production in counties from the Center Region, in the period 2012-2017 (tones)
Source: Own graphic based on the data from the National Institute of Statistics, 2019

In Alba county, the sunflower seed productions ranged from 2,099 tones to 11,830 tones. In Sibiu County, in 2016 the largest production of sunflower seeds, of 1,078 tons, was registered. In Brasov County in 2017, compared to 2015, the sunflower seed production increased by 9.9%, but in absolute value the production ranged from 252 tons to 435 tons. The lowest production was achieved in 2015 (10 tons), in Covasna county. Also, in this county, in 2017 there was a production of 982 tones, which represents a substantial increase, compared to 2015.

Average production per hectare of sunflower seeds. During the analyzed period the average production per hectare of sunflower seeds in the Center Region varied from year to year (see fig. 5). The lowest average production per hectare was recorded in 2012 (1,365 kg / ha). Between 2012-2014 the average production per hectare for sunflower seeds has been on an upward trend from 1.365 kg / ha (2012), to 2.317 kg / ha (2014). In 2015, there was a decline for the average production per hectare for sunflower seeds, compared to 2014. Between 2015-2017 the average production per hectare for sunflower seeds was on an upward trend, from 2,103 kg /ha (2015), the 2,725 kg/ ha (2017). The average production per hectare for sunflower seeds in the Center Region in 2017, compared to 2012, increased by 99.6%. This increase was due to the combination of several factors: favorable climatic conditions; the use in culture of some productive varieties and the application of specific incentives for the sunflower culture.

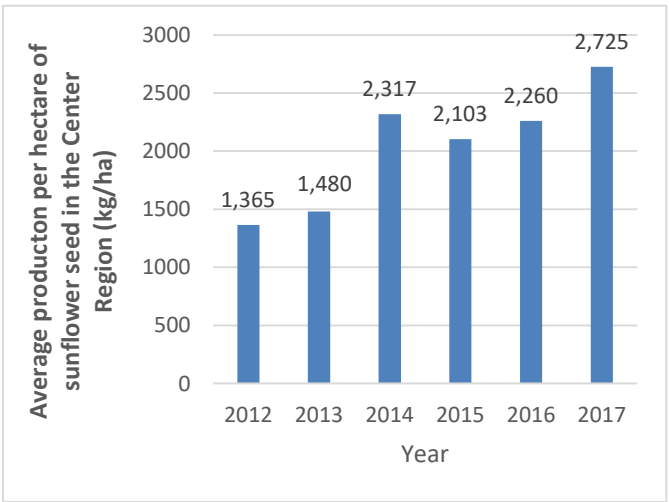

Fig.5. Dynamics of the average production per hectare of sunflower seeds in the Center Region, in the period 2012-2017 (kg / hectare)

Source: Own graphic based on the data from the National Institute of Statistics, 2019

In the period 2012-2017, in the counties of the Center Region we have witnessed changes regarding the average yields per hectare for sunflower seeds (see fig. 6). In Alba county, in 2013, the smallest average production per hectare was registered from all the counties of the Center Region, of 638 kg / ha. In 2014, in this county there is a substantial recovery of the average production per hectare for sunflower seeds, reaching 2,514 kg/ha, exceeding the average production per hectare of 2,317 kg achieved in the Center Region, as well as the average production recorded nationally, of 2,187 kg.

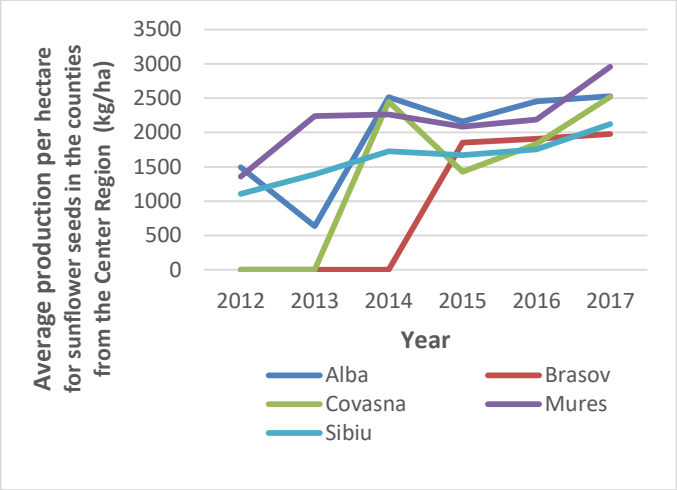

Fig 6. Dynamics of the average production per hectare for sunflower seeds in the counties from the Center Region, between 2012-2017 (kg / hectare)

Source: Own graphic based on the data from the National Institute of Statistics, 2019

In Brasov county, the average production per hectare ranged from 1,853 kg / ha to 1,979 kg/ ha. In Covasna county in 2017, compared to 2014, the average production per hectare increased by 2.8%. In Mures county, the largest production per hectare for sunflower seeds was 2,957 kg / ha. The average production per hectare in Mures County in 2017 exceeded the average production per hectare for sunflower seeds at the national level for the same period, which was 2,917 kg/ ha. In Sibiu county the average production per hectare for sunflower seeds increased by 92.0% in 2017, compared to 2012.

Average purchase price. In 2017, in the Center Region there was an average purchase price of 1.23 lei/ kg for sunflower seeds. The average purchase price registered in this region was lower, compared to the one registered at national level for the same period, which was 1.37 lei / kg. In 2017, in the Center Region, the average purchase price for sunflower seeds decreased by 6.8%, compared to 2016.

CONCLUSIONS

Following the analysis of the main indicators specific to the sector of production and marketing of sunflower seeds in the Center Region for the period 2012-2017, the following were found:

- The smallest surface cultivated with sunflower was 5,455 ha (2012);
- The largest area cultivated with sunflower was registered in 2017 (11,367 hectares);
- In 2017, the most significant area cultivated with sunflower, of 5,770 ha was registered in Mures county;
- In 2017, the production of sunflower seeds in this region represented 1.06% of the total production obtained internally;
- Mures County, in 2017, achieved the largest production of sunflower seeds, of 17,064 tons;
- In 2017, compared to 2012, in the analyzed region the average production per hectare for sunflower seeds increased by 99.6%;
- In 2013, in Alba county the smallest average production per hectare of the analyzed period was realized, of only 638 kg / ha;
- The average purchase price for sunflower seeds in the analyzed region decreased by 6.8%, in 2017, compared to 2016;
- The Center Region does not have an important place on the sunflower seeds market, as this culture is not specific to the area, presenting a small degree of favorability.

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THE ACCOUNTING INFORMATION AND ITS ROLE IN THE ADMINISTRATION OF BUSINESS

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Abstract

The world today is characterized as a society of knowledge , the nature of information signed the informed of quality, operative and timely gives power to those who possess it in other words "a resource of the resources".

Beneficiaries and users of information provided by the company are managers, boards of directors of their suppliers , customers company etc. which can be used in a judicious and rational these data for development and decision making. Since reglementation is in force, the information you have in public are offered in accounting financial, and those of a particular they are the product activities in l town and works OF THE accounting management .

Business man conduct the work in a universe of information . To design a business and actions everyday posed this needed information actual , cogent, both previous and current on the domestic economic environment et and international, but also about public consumer.

Thefinancial accounting information is , in fact one of the main sources of information of any decision-making system. Starting with reporting it is on production obtained or stocks held and ending with annual reports, the goal is to support different types of users in choosing solutions optimal.

We conclude that in order to meet the multiplicity of interests of users of information accounting , they must : be available to anyone with notions about business market and wants to study information corrections ; allowing creditors and investors to form an opinion about the result they entity and the causes that can alter; to provide information on liquidity , solvency movements property items; complicated represent the state tool and the knowledge to determine is correct various fees and taxes.

Keywords: accounting information , users , business, decision

INTRODUCTION

The accounting information is situated in the center of the economic information system and obtained through the use of information technologies is the only source through which we communicate and know the economic life.

In today's society, the firm and the accounting information system are subjects studied by specialists on the one hand as a result of the desire of the economic entities to align themselves with the current information globalization, and on the other hand the effect of the restrictive requirements imposed by the accounting science and practice.

Accounting is considered a system that has at the disposal of those interested, information expressed value about economic units , intended to be useful in decision making.

As a result of the globalization of economies we are witnessing an increase in the value of information for economic entities and which has offered new business opportunities. Nowadays, information technology facilitates the communication and analysis of all information by providing the economic entities with the necessary tools for organizing activities on a global scale.

In our approach we started from a few definitions of information .

The information represents a communication, a message, which contains new elements , in relation to what the user knew until then , regarding the characterization of a certain situation , phenomenon, fact, economic process, etc., in order to trigger the action . (DEX , 1998)

Information is "the action of informing, communicating knowledge or news about a fact or occurrence ; the act of saying or being told something ” . (Oxford English Dictionary, 1989)

According to Galliers, information is "that collection of data which, when presented in a certain way and in a timely manner, enhances the knowledge of the person receiving it so that it is better able to perform a certain activity or to base and take over a better decision ” . (Galliers, R., 1987)

The broadest definition of information is related to its novelty : "Information appears as the result of a complex process, whereby certain data are assigned the significance of the state or dynamics of an object, phenomenon or event, within formal processing procedures. It is the element that links and conditions the different phases of the rational process of coordination and control, it brings an increase of knowledge that increases the degree of certainty of the individual in relation to the environment ”(Paraschivescu, MD, Păvăloaia, W , 1999) .

After Oprea information is "a set of data that is the basis of behavior is comprehensible / used for carrying out an activity, including (but not exclusively) decision-making". (Oprea , D., Airinei , D., Fotache , 2002)

MATERIAL AND METHOD

Research methods used by the authors consisted in an extensive bibliography and the literature includes books, articles and papers . The data was analyzed, processed , graphically represented and conclusions were drawn to provide an overview of the role of accounting information in business administration.

RESULTS AND DISCUSSION

The market for accounting information is interested in the demand for information, which comes from the users of accounting information, with the offer of information supported by the producers of accounting information . (Pereş, I. et al., 2009 ; Malciu, Liliana, 1998)

There is a lack of trust between the producers of accounting information and their users, which is why those who verify and certify the accounting information intervene. (Sybulescu, Claudia , Tonea , Elena , 2015)

In the context of the international accounting harmonization phenomenon, the quality of accounting information is improving. The wealth of information allows the economic agents to increase their competitiveness parameters from an informational point of view in relation to the competitors on the domestic and international market. Information is the only inexhaustible resource, the power factor that determines the prosperity level of a nation .

Qualitative features of information	
Speed	*the time required for information to complete the route from the issuer to the beneficiary;*
Frequency	*the number of information of the same type in a unit of time, determining the rhythm of the information;*
accessibility	*it is determined by the means of communication, the training of the personnel, the possibilities of storage, etc.*
News a	*information capacity to present recent events;*
intelligibility	*ownership of information to be perceived by users;*
reliability	*the ability of information to ensure a real and secure image of an event / object*
relevance	*the quality of information to provide answers in a given situation.*

Fig.1 The characteristics that determine the quality of the information

The quality of information is characterized forced through a variety of features shown in Figure 1: the speed, frequency, availability, timeliness, intelligibility, reliability, relevance. (Negescu, 2004 , Imbrescu, Carmen, 2008)

Accounting information is provided by two types of information systems: (Georgescu, N., 1999 ; Diaconu, E. , 2010)

• financial accounting that provides information to external users and is subject to rules (regulations or standards) , being available to the public;

• Management accounting provides information to internal users for the purpose of making decisions.

According to the General Framework of the IASB, the following categories of users are listed : investors, employees, financial creditors, suppliers and other commercial creditors, customers, the government and its institutions and the public. (General framework for preparing and presenting the financial statements , 2001)

The users of the accounting information and the objectives pursued

USERS	OBJECTIVES FOLLOWED
1. Capital providers	
shareholders	- the performance of the investment made; - future profitability and profit per share; - monitoring the orientation mode of the resource or company ; - the level of liquidity and solvency .
Investors in bonds	- the liquidity and solvency level of the company; - estimating the risk of investing in bonds; - the ability of the company to generate long-term availability; - profitability.
banks	- monitoring the payment capacity and the degree of indebtedness of the company; - analyzing the value of the company, its liquidity and solvency; - the risk of not being able to recover the borrowed amounts; - possibility of the company to pay its obligations, even in the absence of profits;
2. Business and social partners	
providers	- the financial security of their clients, by assessing the financial structure, solvency; - future development of business with business partners, research of outlets.
customers	- financial issues and issues, as they influence the quality of the products / works / services or they can create supply discontinuities, especially when long-term contracts are concluded.
Employees and trade union organizations	- job security; - negotiation and salary size ; - how much is added value?
3. The State	
taxation authorities	- determining the mass of the taxable profit, the tax on the profit, the VAT, other taxes and taxes; - control of the information provided through the accounting summaries;
Government and other government organizations	- the financial rates of the industries and their analysis; - evaluating the performance of the economic sectors and evaluating the feedback of the promoted policies; - establishing subsidies to be granted for various economic activities.
Local authorities	- use of the levers they have (bond issue, granting of facilities, attracting investors).
4. Other users	
Company's management	- the foundation of the research-development policy, the marketing-promotion policy, the acquisition and merger policy, based on the strategic diagnosis of the company; - determining the position of the company within the branch of activity; - in the short term, it aims to increase the profit, and in the long term, the value of the company;
Professional organizations	- reducing the involvement of the state in professional activities; - adopting accounting rules and monitoring their proper application.
Analysts and consultants (also found in the categories presented above)	- follow the objectives set by the beneficiaries of the analysis.

auditors	- appreciation of the continuity of the operation; - auditing and certifying financial statements.
The prosecuting bodies or the courts	- the judicial accounting expertise for the resolution of any disputes; - evaluating the possibilities of recovery of a company in difficulty.
The audience	- the public interest is somewhat modest, especially since its access is limited due to the specific language.

Another classification of users can be presented as follows: the management of the company, the social partners (trade unions, staff), the financial partners (current or potential shareholders, banks), the commercial partners (suppliers and customers) and other partners (the central administration). , N., 1999)

The categories of users who might be interested in financial information about a large public company and the objectives pursued by each in order to substantiate the decisions could be classified as presented in table 1. (Sîrbulescu, Claudia et al, 2010; Matiş, D. , Fătăcean, Ghe, 2003)

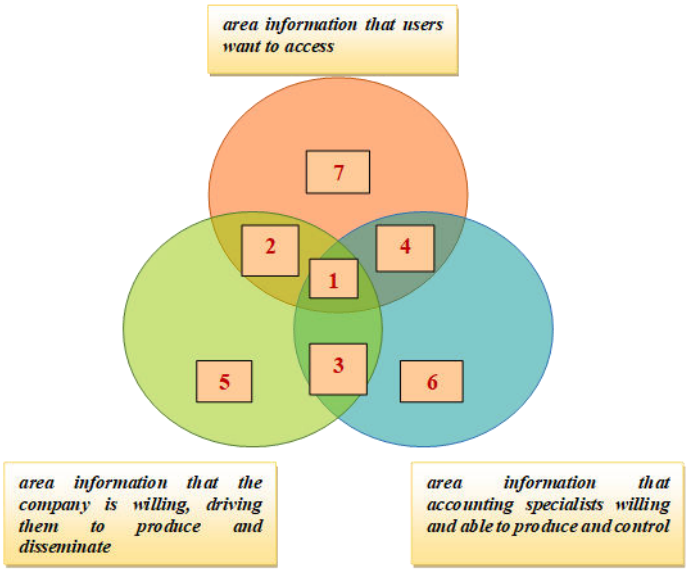

Fig. 2. The areas of interest for the information provided by the company
Sources: Sybulescu, Claudia, Tonea, Elena, 2015

Users who request accounting information do not always succeed in motivating their requests for information, which have an increasing tendency for growth, are qualitatively better, more credible and better processed, but which are more expensive.

By using a figure composed of three spheres of activity, corresponding to the three categories of actors, seven areas result from their

intersection (figure 2): (Matiş, D., Fătăcean, Ghe, 2003; Burns, TJ, Hendrickson, HS, 1996).

Zone 1 (obtained by the intersection of the three areas) summarizes the interest grouping of the three categories of actors and summarizes information that the company is willing to publish because the financial - accounting sector can produce and supply them. Most of the information in area 1 is provided by the financial accounting and is obtained from the accounting summary and reporting documents.

In the 2 summarizes information on the company is willing to provide the information requested by users, but that specialists in accounting Health can not produce and can not control. Information them in zone 2 concerns : human resources, social relations and environmental phenomena.

Zone 3 includes the information that the company is willing to serve, specialists in accounting Health can produce and check . However, this information is not requested by users because they represent the absolute and exact dimensions of the activity of the company, but they are not important for users.

Zone 4 provides information that professionals in accounting health can produce and requested by users, especially competitors . In the case of information in this area, the company is not willing to make them available to users . This information refers to product costs, resources allocated to activities , etc.

In the five information can not be determined and verified by experts in accounting , users do not require it, but the company is willing to provide . This information is used in the fight with competition, because through its dissemination it is desired to mask the information more significant than the disseminated.

For area 6 , the accounting specialists can determine and control the information, but the company does not want to disseminate them. This information are interesting for users and are expensive (data are very analytical).

Area 7 contains interesting information for users, but which the company does not want to provide and exceeds the area of competence of the accountants. Information in this area fall under the category specific plan ui strategic company .

Accounting information , an important component of economic information, is the basic component of the accounting information system . Also , the information accountant complicated, the basis for calculating the actual values on all transactions economic-financial and ensure the safety required for the realization of projections viable .

CONCLUSION

Accounting information is a component single important economic information system at the level of each company because "every stakeholder in the activity of the company resorts to accounting information, because it is the only source that can provide image work and his situation, starting from streams and monetary masses, which for a certain period interested her. " (Capron, M. , 1994)

Accounting information is provided through financial statements in order to meet the information needs of different user groups . Users may have different information needs and interests and not all can be satisfied . In the case of their managers , the responsibility lies with the owners / shareholders for the efficient management of the business. They are remunerated for their activity , and their compensation increases the expenses of the company and reduces the profit due to the shareholders . Banks have interests related to the profitability of the company and its ability to pay the debts. Managers would like to use the borrowed amounts for as long as possible and pay low interest rates . In the case of joining them, their efforts have always contributed to the profit and they want salary increases. In this situation there would be a major increase in the company 's expenses and a decrease in the profit. We can conclude that there is always accounting information of common interest, but also information that is useful only to a certain category of users.

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RESEARCH ON THE BEHAVIOUR AND QUALITATIVE CHANGES OF GREEN BEANS

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Abstract

Green beans are very suitable for preservation by freezing. During the freezing and thawing operations some physical-chemical and organoleptic characteristics are changed that are due mainly to the changes in colour, structure-texture and degradation of some components, especially in vitamin C.

Key words: green beans, freezing, colour change, structure-texture, organoleptic properties, vitamin C.

INTRODUCTION

Beans are part of the legume family, being a high-nutrient vegetable that derives from high protein content 22.3% (essential amino acids 8290 mg, non-essential amino acids 12570 mg relative to the protein content) and other components: 44% starch, 44% cellulose, 3.7% pectin, stachyose and raffinose 2%, glucose and sucrose 1.5%, macroelements (potassium 1100, calcium 150, magnesium 103, sodium 40, sulfur 159, phosphorus 541mg/100g product), microelements (iron 5940, iodine 12, manganese 1340, copper 580, nickel 39.4, selenium 24.9, zinc 3210, boron 490, cobalt 18.7, titanium 150, fluorine 44 μ/100 g product) and vitamins (E 3.84 mg%, C 0.09%, biotin 2.10 μ%, niacin 1.20 mg%, pantothenic acid 0.18 mg%, riboflavin 0.50 mg%), (Banu C, 2010).

Green beans have ten times times lower protein and carbohydrate content, and the levels of the other components are reduced compared to the values previously presented (Banu C, 2010).

The green beans are very suitable for preservation by freezing, being a species that retains its pigmentation during the freezing process. Freezing can be done for both scalded and unscalded pods (A. Ardelean, 2013).

Obtaining a quality finished product depends primarily on the quality of the raw material. This quality of the raw material is a variety characteristic, being greatly influenced by the applied agrotechnics and the pedo-climatic conditions in the area and the respective year.

According to quality, the beans are classified into two quality classes: I and II. For freezing, those of the first quality class are suitable. Thus, the pods should be characteristic of the variety, fresh, young, clean, fresh, whole, with the stem and

grains incompletely formed. Also, the pods should be fleshy, with a firm texture before and after scalding, with the slightest tendency to change color, succulent, with a smooth break, without threads, which shows the degree of maturity. The taste and aroma of the pods must be pronounced and specific. The varieties suitable to freezing are those with a diameter of pods less than 10 mm, with a cylindrical shape, and the connection line should be as visible as possible. The rubbed, beaten or attacked pods by diseases and pests (Beceanu D., Chira A., 2003) are not accepted.

During the processing by freezing, as well as during the defrosting, important changes of physico-chemical and organoleptic nature take place.

Changes of a physical nature refer to the loss of water from frozen products by evaporation, when the packaging allows this. If the packaging is impermeable to water vapor and is tightly sealed, the evaporated water from the product crystallizes on the packaging, and evaporation from the outside does not occur. Evaporation occurs both during freezing and during storage. Bulk frozen products lose 0.5 to 1.5% of the water they contain, depending on the nature of the product. In this respect, fast freezing is effective. Water losses are also favored by the too high temperatures in storage spaces and temperature fluctuations. The more frequent and larger, the percentage of water lost from vegetables is higher (Gh. Mihalca et al., 1980).

The loss of water from the superficial tissues leads to another unwanted phenomenon known as the cold burn, manifested by the browning of the tissues. This phenomenon occurs because the oxygen from the atmosphere takes the place of the water lost from the tissues and occurs mainly in improperly packaged products, with leakage defects, due to the advanced dehydration of the superficial tissues. In order to avoid this phenomenon, it is recommended to use waterproof packaging and to ensure high humidity, as close to 100%, without variations (I.Potec et al., 1983, 1985).

Another phenomenon encountered in frozen beans is the detachment of the upper layers of the pod epidermis, which affects the commercial appearance of the finished product and produces some unwanted turbidity in the boiling water. The phenomenon is favored by long-lasting scalding or if boiling has continued longer than necessary.

The colour changes can also occur in unscalded pods, and in the case of the scalded ones it appears completely sporadic. Thus, the colour changes from green to gray and even to brown, due to browning phenomena. These colour changes occur under the action of oxidative enzymes, being more pronounced and progressing rapidly in acidic environment and in divided products. For these reasons, the scalding operation is performed in saline solution in a concentration of 0.1 - 0.2%, which has the role of inhibiting the activity of these enzymes (Gherghi A., 1995, 1998, I.F.Radu, 1985, 1967).

The defects mentioned above can have other causes: storage of the raw material at room temperature for a longer period; failure to perform the cooling operation after scalding; partial defrosting during storage; storage of frozen products for too long.

Also, the loss of water content in the products has the effect of reducing the weight of the products.

The modification of the structure of the products is also included in the category of physico-chemical modifications, especially those that are scalded. Due to the scalding operation, performed to inhibit the activity of oxidative enzymes and the operation of exposure to freezing by cold, a series of biochemical transformations of esterification take place, which cause changes in the structure of the pectic substances in cell membranes with role in tissue consistency. Thus, the structure-texture becomes looser. The intensity of this phenomenon depends on the species and variety (Mihalca Gh. Et al., 1980).

Among the important chemical changes that take place during the technological flow are the losses of macro and micro elements, of vitamins and especially of vitamin C.

Vitamin C being soluble in water undergoes quantitative changes and slight chemical degradation. Studies have shown that vitamin C is exposed to more severe degradation at – 180 °C, compared to - 250°C, which shows its better stability (A. Monzini, 1970, quoted by Gh Mihalca et al., 1980).

Organoleptic changes refer to diminished losses of aroma, taste and colour.

The studies carried out on the scraped and frozen products allowed to draw some conclusions. First of all the most important ultrastructural changes of the cellular tissues are mainly due to the scalding operations and less to the freezing speeds. However, the higher the freezing rate, the smaller these tissue changes. Also, the young tissues are less affected compared to the aged tissues, and the raw materials do not support better freezing speeds, respectively longer duration, compared to the scalded ones. Referring to beans, heat treatment (scalding) negatively affects the structure of the pods. Under these conditions, the advantages and disadvantages of the scalding operation must be subjected to analysis.

MATERIAL AND METHOD

The research was carried out in 2019, at the Faculty of Environmental Protection Oradea.

Narbone green beans (semi-late varieties) were used in the studies.

The raw material comes from the field culture, being harvested when 70-80% of the pods reached technological maturity, at the beginning of July.

The research was carried out on fresh green bean pods as well as on frozen beans at certain intervals.

The finished frozen product is intended for the preparation of various green bean dishes.

The phases of the technological flow are: harvesting, transport, quantitative and qualitative reception, refrigeration, conditioning (sorting, cutting ends, splitting), scalding, cooling, freezing, packing preparation, packing, storage.

Refrigeration was performed at 40°C for one day, followed by the technological flow.

The splitting was done by cutting into 2 cm long pieces.

Immediately after splitting the pieces of pods were soaked in hot water for one minute, in which 0.2% salt was added to avoid the browning phenomenon.

The freezing was done in the home freezer at - 18ºC, temperature that was kept for two, four months respectively.

The main chemical indicators analyzed, for both fresh and frozen samples, refer to the content in vitamin C. Also, the behavior of beans pods during the technological flow was studied.

For the frozen samples the determinations were made after thawing and the proper preparation of the samples.

The organoleptic properties of fresh and frozen pods were determined by sensory methods. Thus, the appearance of the pods was analyzed in terms of pigmentation and texture, but also the taste and aroma.

RESULTS AND DISSCUSIONS

Immediately after harvesting, analysis samples were carried out, and the results show the average of the determinations.

The content of vitamin C analyzed in fresh and processed green beans are presented in table no. 1

Table no. 1

Sample	Vitamin C (mg/100g)		
	Fresh sample	Frozen sample 2 months	Frozen sample 4 months
1	19	15.8	14.2
2	19	15.5	14.0
3	18	15.2	13.8
4	20	16.7	15.2
5	21	17.7	16.5
Average of samples	19.4	16.18	14.7

From the obtained results we can see a decrease in the content of vitamin C higher in frozen samples for two months, about 17% and 24.3% for frozen ones for 4 months.

This decrease of the vitamin C content of 17% is due on the one hand to the scalding operation in hot water, the vitamin C being soluble, as well as due to the freezing operation with slow speed.

After another two months of freezing, the decreases in vitamin C content are diminished, due to its stability at low temperatures. This diminished decrease and stability of vitamin C after a period of 4 months of freezing at - 180°C can be explained by maintaining the temperature recorded at this value, the finished product not being exposed to temperature fluctuations.

Regarding the texture of scalded and frozen pods, changes are observed. This has become much looser, due to changes in the structure of pectic substances in the cell membranes with a role in tissue consistency, changes that occur both during scalding and by exposure to freezing. However, no detachments of the superficial layers of the epidermis of the pods were reported, even though they were scalded.

This is due, first of all, to the correct execution of the scalding operation as a duration and temperature, but also due to the variety, which has no sensitivity to heat treatments, being a variety that is well suited for industrialization.

The following indicators: colour, taste, aroma were also analyzed by organoleptic methods.

The colour has undergone slight changes. Thus, the green colour lost its shine, during the scalding and storage, the chlorophyll gradually turned into an olive-green pheophytin.

Due to the sealed polyethylene packages and the lack of humidity and temperature variations throughout storage, no phenomena of browning and cold burning were reported.

The taste and aroma have also changed, so they are no longer pronounced, being diminished during storage. Due to the fact that the scalding action was performed, the action of the lipase enzymes was inhibited and, as a result, the frozen product did not acquire the taste of "hay", which is due to the action of these enzymes.

CONCLUSIONS

The following conclusions are drawn from the analysis of the results regarding the qualitative changes in the frozen green bean samples:

1. Vitamin C content decreased more during the first 2 months of storage, after which the loss diminished, reaching a stability of value;
2. Changes in the structure and texture of the scalded and frozen pods appear, which becomes looser, but without phenomena of detachment of the superficial layers of the epidermis;

3. The colour has undergone slight changes, transforming during storage into olive-green;
4. The phenomena of browning and cold burning were not reported, due to the sealed polyethylene packages and the lack of humidity and temperature variations throughout the storage period;
5. The taste and aroma have lost their intensity during the four months of storage, but without the appearance of "hay" taste;
6. Green bean is a species that is very suitable to preservation by freezing in the scalded version;
7. Due to the biological peculiarities of green bean pods, it is recommended to carry out the harvesting operations at the optimum harvesting time, without exceeding the technological maturity phase and using the varieties that are suitable for industrialization;
8. It is recommended to perform the scalding operation as a result of the qualitative advantages over the finished product;
9. The use of waterproof, sealed packaging is absolutely mandatory to obtain a quality finished product;
10. It is recommended to continue the research on freezing green bean pods also in the unscalded version.

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COMPARISON BETWEEN THE MAXIMUM DEGREE OF INCORPORATION OF ESSENTIAL FATTY ACIDS IN YOGURT COMPARED TO FRESH SPUN PASTE CHEESE

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Abstract

In this paper we tried to obtain two dairy products of different classes enriched in essential fatty acids. It has been the manufacture of a acid milk product and a cheese sortment. In the class of acid dairy products the manufacture of yogurt was chosen and in the cheese class the manufacture of spun paste cheese was chosen. It was followed by the incorporation of the fish oil added in the raw material milk into the fat globules of the sheep milk used in the manufacture of the products. In order to determine the maximum limit of incorporation, three successive concentrations of fish oil in milk were used: 0.05%; 0.10%; 0.15%. We analyzed three essential fatty acids that are specific for both sheep's milk and fish oil. It obtained an increase in the proportion of essential fatty acids in the samples with added fish oil as compared with the control. In the case of linoleic acid from 2,55% to 2,88% in the manufacture of yogurt and from 2,53 to 2,93 in the manufacture of spun paste cheese. The proportion of linolenic acid increased from 0,97 to 1,15 for yogurt and from 0,89% to 1,15% for spun paste cheese and γ*-linolenic acid increased from 0,72 to 1,05 for yogurt and spun paste cheese from 0,87 to 1,05. The maximum embedding of essential fatty acids in milk fat exceeds the established maximum concentration in milk added fish oil (0,15%).*

Key words: sheep's milk, essential fatty acids

INTRODUCTION

The enrichment of food in functional foods is increasingly present in the contemporary world, contributing to the improvement of the quality of life. This contributes to the prevention of disease but also to the increase of the average age of the population.

Different microorganisms cause gastroenteritis through the mouth. Lactic acid bacteria have been shown to have antiviral action (Dong Joo Seo et all, 2020).

Lactic acid bacteria, in addition to the lactic acid they produce, can also create aromatic substances such as diacetyl, under maturing cheese conditions. (Yun-Jeong Choi et all, 2019).

After lactic fermentation pH changes occur. The effects determined by pH (pH <5.5) led to changes in the structure of milk protein. (He Ni et all, 2019).

The concentration in protein, especially in whey protein, of the raw material milk positively influences the quality of dairy products both in terms of their consistency as well as their taste and aroma. Also the percentage of milk fat

but also the degree of homogenization of milk fat have a beneficial effect on the quality of dairy products, influencing the consistency, taste and aroma. The degree of homogenization of milk fat has the effect of milk whitening because there are smaller particles and more light reflecting (Ni Cheng et all, 2019).

Milk and dairy products are important sources of nutrients in the human diet. However, they are also the main sources of saturated fatty acids that can increase the risk of cardiometabolic and cardiovascular disease. Unfortunately, the essential fatty acids, which are known for their health benefits, are found in small quantities in the normal fat of ruminant milk and in dairy products. That's why enriching dairy products in essential fatty acids is beneficial for health (Solomon Gebreyowhans et all, 2019).

The presence of free amino acids, essential free amino acids, free with branched chain amino acids (leucine, isoleucine and valine) is specific to cheeses obtained from sheep's milk. This fact determines the high nutritional and biological value of these products (Reis Lima et all, 2019).

Essential fatty acids are nutrients needed to maintain vital functions, improve the immune system and disease resistance. A diet with the lowest content of ω-3 resulted in a higher incidence of hepatic granulomas, which suggests a possible relationship between essential fatty acid deficiency and hepatic granulomatosis. (Marta Carvalho et all, 2019).

Dry eye is a common disease that can seriously affect quality of life. Essential omega-3 and omega-6 fatty acids are beneficial for patients with eye disease and have shown promising results (Ammar M, 2014).

By using vegetable oils, the rheology of the products is improved. It favors the emulsification of the fat and the products become creamier (Morna Anamaria, 2018).

The dietary intake of essential fatty acids from corn, supplemented with fish oil has cardioprotective effects (Refaat A. Eid et all, 2019).

It has been demonstrated that consumption of saturated fat replacement of essential fatty acids can protect the alveolar bone loss which suggests a therapeutic benefit of fish oil in hypercholesterolemic patients (María Eugenia Antona et all, 2020).

MATERIAL AND METHOD

The production of the products was carried out under the manufacturing regime. It was used as a raw material sheep's milk from the first lactation period to which was added fish oil to enrich the products in essential fatty acids. The milk was pasteurized at medium temperature (72-74 ° C; for 30 sec). As additional operation was carried out in order to split the homogenization of milk fat globules for the purpose incorporation of fish oil in the inside thereof. The raw material milk for the manufacture of the yogurt was treated with high temperature superilmentary heat for the advanced destruction of the microorganisms in the spontaneous microflora of the milk for inoculation with selected lactic culture specific for the yogurt.

To obtain the cheesecloth, the curd was made which was matured to the optimum acidity (176 °T) of the scrap. The cheese was scalded at 85 °C.

In the process of obtaining yogurt and spun paste cheese, analyzes were made for the raw material milk, on the technological flow and the finished product.

For the raw material milk, the physico-chemical characteristics were analyzed. The acidity analysis was performed by titration and the result was expressed both in ° T (Thörner) and in grams of lactic acid expressed as a percentage. The determination of the percentage of fat was performed first by the acid-butyrometric method, the density analysis was performed areometrically. At the same time, the raw material milk was analyzed in an electronic system using the Lactostar apparatus which also determines the percentage of dry matter, proteins and lactose.

The technological flow followed the temperature and the time of operations, the acidity of the products.

The final products were analyzed from an organoleptic and physico-chemical point of view.

Sensory products were analyzed by 5 unauthorized persons. The acidity analysis was performed by the titratable method and the results were expressed in ° T and g lactic acid%. The analysis of the dry substance was carried out by the drying method in the oven, the analysis of the percentage of fat by the acicobutyrometric method and the determination of the salt percentage by the Mohr method.

Fatty acid analysis was performed by gas chromatography. 19 fatty acids were analyzed but the focus was on the analysis of three essential fatty acids which are representative for both fish oil and sheep's milk.

RESULTS AND DISSCUSIONS

The coding of the samples is presented in the table 1

Table 1

Coding of the samples

No. cr.	Addition fish oil %	Sample code	
		Yogurt	Fresh spun paste cheese
1	0	I_0	Cp_0

2	0,0,5	$I_{0,05}$	$Cp_{0,05}$
3	0,10	$I_{0,10}$	$Cp_{0,10}$
4	0,15	$I_{0,15}$	$Cp_{0,15}$

The sensory analyzes concluded that the taste and aroma of fish is not perceived at concentrations of 0.05% and 0.10% of fish oil and in samples with a concentration of 1.15% added of fish oil the taste and aroma of fish they disappeared after 24 hours of storage.

Physico-chemical analyzes of the raw material milk, on the technological flow and the finished product showed that there are no significant differences between the samples with added fish oil and the control samples, without addition.

The evolution of the proportion of the three essential fatty acids analyzed is presented in table 2.

Table 2

Concentration in essential fatty acids of sheep's milk and fresh yogurt and fresh spun paste cheese samples depending on the percentage of added fish oil

No. cr.	Sample	Concentration in essential fatty acids of samples		
		Linoleic acid	Linolenic acid	**γ** -linolenic acid
1	I_0	2,55	0,97	0,72
2	$I_{0,05}$	2,64	1,00	0,76
3	$I_{0,10}$	2,83	1,07	0,85
4	$I_{0,15}$	2,88	1,15	1,05
5	Cp_0	2,53	0,89	0,87
6	$Cp_{0,05}$	2,83	1,08	0,91
7	$Cp_{0,15}$	2,93	1,15	1,05

Table 2 shows results an increase in the proportion of three essential fatty acids analyzed in the samples with added fish oil.

Figure 1 shows an increase in the proportion of the three essential fatty acids in proportion to the concentration of fish oil of the raw milk.

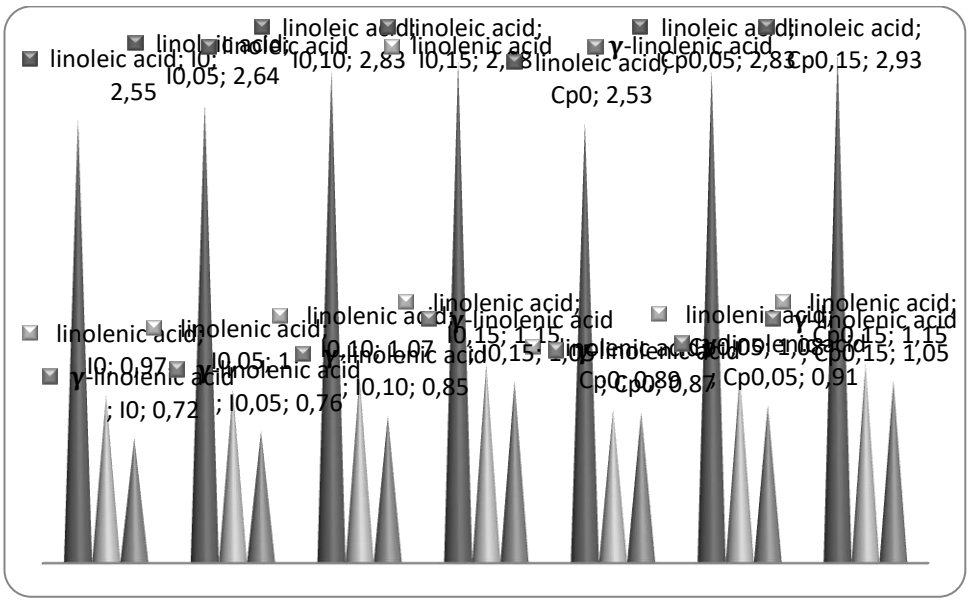

Figure 1 Evolution of the proportion of essential fatty acids in the samples with the addition of fish oil compared to the control sample

Table 3

Concentration in fish oil of raw material milk
at the theoretical threshold of incorporation of essential fatty acids

	Concentration in fish oil of raw material milk at the theoretical threshold of incorporation of essential fatty acids		
	linoleic acid	linolenic acid	**γ** -linolenic acid
Fresh spun paste cheese	0,3773	0,3970	0,7694
Yogurt	0,7294	1,3825	-

Table 3 presents the limit of incorporation of the essential fatty acids depending on the concentration of milk fish oil. It is observed that the maximum incorporation limit of the three essential fatty acids exceeds the maximum concentration established (0.15%). In yogurt there is no maximum limit of **γ**-linolenic acid. This is due to the heat treatment of the raw material milk during which there is the possibility of thermal splitting of the fat cell membrane.

CONCLUSIONS

The manufacture of dairy products enriched in essential fatty acids is possible by adding fish oil to the raw material milk by homogenizing the mixture of milk with fish oil to obtain a good inclusion of the essential fatty acids inside the fat globule. To eliminate the fish taste and aroma of the products, the mixture of milk raw material with fish oil can be deodorized.

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THE INFLUENCE OF DIFFERENT FACTORS ON THE QUALITY OF MAYONNAISE

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Abstract

The objective of this paper was to investigate how different parameters of mayonnaise production may affect the quality of mayonnaise, respectively the formation and breaking of the emulsion.

In the production of mayonnaise, it is important to obtain a high quality product and avoid reversing phases. The standard recipe (R1) is best suited to obtain a high quality mayonnaise. The whole egg recipe (R4) comes close to the qualities of the standard recipe, but does not contain a sufficient amount of emulsifiers. Both the recipe with low egg yolk content (R2) and egg yolk powder (R3) are affected by the reversal process in the emulsification phase. The viscosity, density and pH of the four recipes are influenced by the mixing speed and time.

Key words: mayonnaise, phase inversed mayonnaise, full-fat mayonnaise

INTRODUCTION

Mayonnaise is a thick creamy sauce that contains vegetable oil, acidic component (e.g.acetic acid), egg yolk (contains a natural emulsifier — egg lecithin), sugar, salt and spicesand other emulsifying and thickening agent.

Mayonnaise is a pale yellow sauce with a thick and creamy texture. Mayonnaise can be divided into two main types depending on the amount of oil that is used in the recipe. Low fat mayonnaise contain around 30-65% oil while full-fat mayonnaise contains around 75-80%.

Due to the consumers' preferences, majority of the mayonnaise products on the market are low-fat mayonnaises. Low-fat mayonnaises have fat content around 20-40 % (Depree and Savage 2001; Yildirim, Sumnu, and Sahin 2016; Saarela et al. 2010).

In this paper only full-fat mayonnaise was investigated. The oil is dispersed in a water phase to form an oil-in-water (O/W) emulsion.

The ingredients that can be found in the water phase are: egg, vinegar, salt, sugar, mustard and water. The oil-water interfaces are stabilized by egg yolk which contains emulsifying agents.

In order to form the O/W emulsion the oil needs to be broken up into small droplets. This is achieved by applying high amount of energy in the form of stirring. Generally the more energy that is applied the smaller the droplets become and smaller droplets makes the emulsion more stable.

When making mayonnaise at home there is always a risk of a phase inversion, resulting in a water-in-oil (W/O) emulsion.

Phase inversed mayonnaise, or broken mayonnaise, is characterized by a low viscosity which is close to the viscosity of oil. Every mayonnaise maker has their own tips and tricks for preventing this phenomenon, including everything from whipping technique to the temperature of the ingredients.

The best tip according to both Jamie Oliver and Martha Stewart is to pour the oil in slowly (Oliver, 2013; Stewart, 2017).

MATERIAL AND METHOD

The objective of the paper was to investigate how different parameters of mayonnaise production may affect the quality of mayonnaise, respectively the formation and breaking of the emulsion.

The mixing speed, temperature, oil content, egg content and type were modified in order to see how mayonnaise quality is affected.

The objectives I have pursued in this paper were: to analyze the variation of the viscosity of the mayonnaise according to time at low, medium and high speed; analysis of the variation of mayonnaise density according to time at low, medium and high speed; analysis of the variation of pH of mayonnaise according to time at low, medium and high speed; analysis of factors that influence the stability and quality of the mayonnaise; analysis of parameters that may affect the quality of the mayonnaise: mixing speed (low, medium and maximum speed (unit of measure is m / s)), quantity and type of emulsifier.

Mayonnaise is an oil-in-water (O/W) emulsion, in which the dispersion medium (oil) represents 60-80% of the total quantity (Le Denmat et all, 2000). The emulsifying agents used for the preparation of mayonnaise are egg yolk and mustard. The emulsifier used may vary between whole eggs (common in the USA), the liquid egg yolk (common in Europe) and the dry egg yolk (common in Russia) (Cedergårdh, 2014).

The reversal of the phases of an emulsion consists in transforming one type of emulsion into another type of emulsion. It can be produced by: changing the temperature by changing the concentration of one of the phases (Andersson, I., 2015; Kumar et all, 2015).

Phase reversal occurs when the emulsion is transformed from an oil-in-water (O/W) emulsion into a water-in-oil (W/O) emulsion.

Oil is the main ingredient of mayonnaise and therefore has a great influence on the quality of the final product. The quantity of oil dispersed in the mayonnaise contributes to the viscoelastic behavior, the stability and the high viscosity of the product. The smooth texture and appearance are also

dependent on the amount of oil present in the product. (McClements and Demetriades, 1998).

In mayonnaise only egg yolk and egg white are used as emulsifying, stabilizing and coloring agent (the only source allowed) (Li-Chan et all, 1995; Matsumura, Y. and Matsumiya, K., 2012).

The egg yolk is more commonly used compared to egg white, due to its larger emulsifier properties.

The vinegar used in mayonnaise contributes to antimicrobial preservation, mayonnaise aroma and low pH. By keeping the pH of the product low, the antimicrobial safety and preservation of the product increases. The low pH used in mayonnaise is close to the isoelectric point of the proteins in the egg yolk.

Salt contributes to the aroma and stability of mayonnaise (Depree and Savage 2001). Salt helps neutralize protein loads so they can adsorb more efficiently at the droplet interface. As a result of flocculation, the packing of mayonnaise becomes tighter and the viscosity increases.

Sugar contributes to the aroma of mayonnaise and is added mainly to counteract the aroma of vinegar. (Duncan, 2004)

The mustard facilitates emulsification, contributes to the aroma and color of the mayonnaise. Most of the mustard taste comes from isothiocyanates. Mayonnaise acid stabilizes these aromatic compounds. (Depree and Savage, 2001). Mustard used in mayonnaise can be added as mustard flour instead of regular mustard (Duncan, 2004).

Four recipes were used to achieve the objectives of the paper:

- standard (R1) with liquid egg yolk;
- mayonnaise (R2) with a low egg content;
- mayonnaise (R3) with egg yolk powder;
- mayonnaise (R4) with whole egg.

The standard temperature of the ingredients was 8 °C.

The differences between the 4 recipes of mayonnaise consist of changing the recipe, namely the quantity of water, salt, egg yolk and oil, the quantity of the other ingredients remaining unchanged.

In the standard recipe (R1) I used 8.5% egg yolk, 5.8% water, 0.3% salt, 2.10% vinegar and 80.5% oil.

As for the second recipe (R2), I modified it, reducing the amount of yolk to 6%, but I increased the amount of water to 8.10% and salt to 0.5%, the amount of oil and vinegar being unchanged, in order to maintain the concentration and the total amount of aqueous phase as in the standard recipe.

In the third recipe (R3) I replaced the liquid egg yolk with egg yolk powder, increased the water quantity to 9.8%, salt to 1.04%, vinegar to 3% and decreased the oil quantity to 79%.

In the fourth recipe (R4) I used both whole egg 3.61% and egg yolk 1.96%, reducing the water quantity to 7.10%, salt to 1.04%, the amount of oil and vinegar remaining the same as in R3.

To achieve the objectives, taking into account the physical properties of the analysed product, we made the following determinations: pH determination; density determination; viscosity determining and stability of the samples.

The pH determination was performed using the Inolab WTW pH Meter, pH 720. The viscosity analysis was performed after one day storage at ambient temperature using the Brookfield Viscometer. In the preparation of mayonnaise we used a hand mixer with 7 steps, power 250 W, Hausberg brand.

RESULTS AND DISCUSSION

The first determination consisted of measuring the viscosity at the 4 recipes of mayonnaise, at low, medium and high speed.

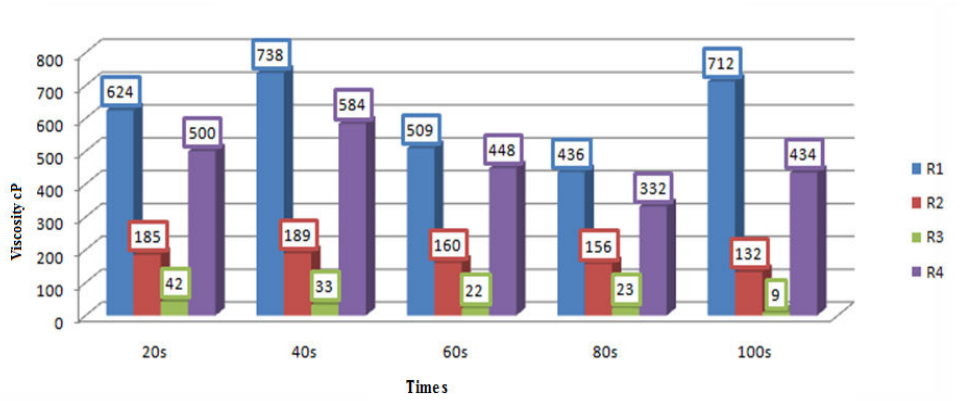

Fig. 1. Variation of mayonnaise viscosity as a function of time at low speed

The structure and consistency do not change when changing gears to the standard recipe, the color has changed from intense yellow, at low speed, to pale yellow at maximum speed.

In the standard recipe, the viscosity increases from 624 cP to 738 cP, from 20 to 40 seconds of mixing at low speed.

The mayonnaise made according to the standard recipe, with a high oil content, has a firm texture, but is also more sensitive to over-shearing.

In the second recipe (R2) I decreased the quantity of liquid egg yolk from 8.5% (R1) to 6% (R2), but increased the water quantity to 8.10% and salt to 0.5%, the amount of oil and vinegar remaining unchanged, in order to maintain the concentration and total amount of aqueous phase as in the standard recipe.

The increase of the water quantity and the decrease of the egg quantity in the mayonnaise obtained with a low egg content led to the reversal of the phases, caused by a change of the oil-water ratio. When the volume of the dispersed phase became too large, a phase inversion occurred. The phase reversal point depended on the intensity of the stirring and the speed of addition of the dispersed phase.

Increasing the amount of water, salt, **replacing the liquid egg yolk with egg yolk powder** and decreasing the amount of oil led to the reversal of the phases, caused by a change in the oil-water ratio.

The phase reversal of the mayonnaise occurred during the coarse emulsification stage. The inversion in the coarse emulsion phase was characterized by a very early phase inversion and, therefore, no mayonnaise was formed.

The viscosity of the **mayonnaise obtained with whole egg**, shows a decrease in viscosity compared to the standard recipe, from 624 cP to 500 cP, from 20 to 40 seconds of mixing at low speed. Recipes R2 and R3 have a low viscosity, compared to the standard recipe, both mayonnaises having a long texture that made them thinner and more elastic.

This is not a desired quality of mayonnaise and, therefore, we can say that these mayonnaises do not meet the requirements of adequate mayonnaise.

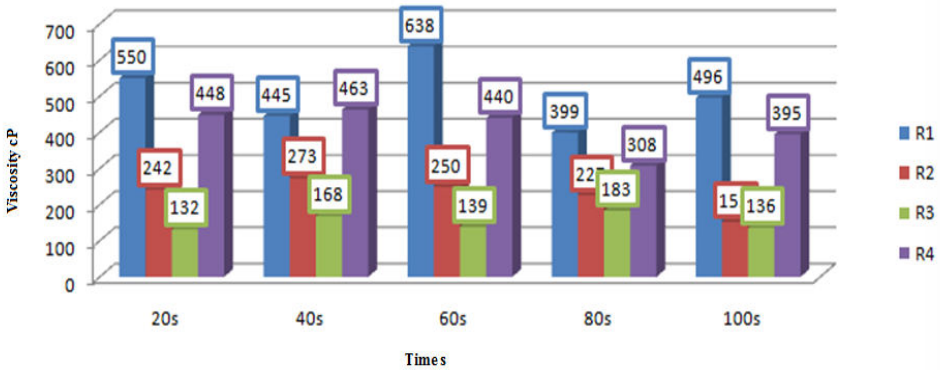

Fig. 2. Variation of mayonnaise viscosity as a function of time at medium speed

Regarding the variation of the mayonnaise viscosity at medium speed in the standard recipe, the viscosity decreases from 550 cP to 445 cP, from 20 to 40 seconds of mixing at medium speed.

The viscosity with egg yolk powder shows a decrease in the viscosity compared to the standard recipe and the second recipe, from 550 cP and 242 cP, to 132 cP, from 20 to 40 seconds of mixing at medium speed.

The viscosity of the mayonnaise obtained with whole egg shows a decrease compared to the standard recipe, from 550 cP to 448 cP, from 20 to

40 seconds of mixing at medium speed. By increasing the mixing time from 40 to 60 and 80 seconds, respectively, the viscosity of the mayonnaise decreases from 463 cP to 308 cP. At a longer mixing time, 100 seconds, the quality decreases, the mayonnaise becomes excessive and the viscosity increases to 395 cP.

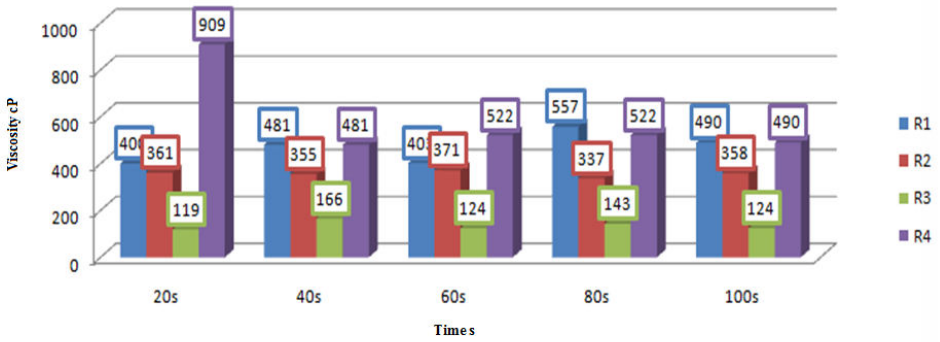

Fig. 3. Variation of viscosity of mayonnaise as a function of time at high speed

Regarding the variation of the mayonnaise viscosity at high speed in the standard recipe, the viscosity increases from 400 cP to 481 cP, from 20 to 40 seconds of mixing at high speed.

The viscosity of the mayonnaise obtained with a low egg content shows a great decrease in viscosity compared to the standard recipe, from 400 cP to 361 cP, from 20 to 40 seconds of mixing at high speed.

The viscosity with egg yolk powder shows a decrease in viscosity compared to the standard recipe and the second recipe, from 400 cP and 361 cP, to 119 cP, from 20 to 40 seconds of mixing at high speed.

The viscosity of the mayonnaise obtained with whole egg shows an increase compared to the standard recipe, from 400 cP to 909 cP, from 20 to 40 seconds of mixing at high speed. 909 cP is the highest value of mayonnaise viscosity obtained with whole egg, at high speed.

After analyzing the data, it was found that mixing speed, egg content, egg type and oil content influence the quality of the mayonnaise.

The quality of the mayonnaise changes during the emulsification process, presenting an optimum to the standard recipe. When the mayonnaise is exposed to high speed for a long time, the egg yolk protein is irreversibly destroyed, leading to a decrease in viscosity.

As the oil content in mayonnaise increases, mayonnaise becomes more and more sensitive to over-shearing. The increase of the dispersed phase gives a firm texture and a higher viscosity. Higher viscosity makes the shear more intense, leading to a faster destruction of the proteins in the egg yolk (Hilma Elena, 2018).

In conclusion, the reversal of the emulsion phase occurred with the destruction of the proteins in the egg yolk (Thakur et all, 2008). This was observed in the low egg content recipe (R2) and in the egg yolk mayonnaise recipe (R3).

Mayonnaise density at low, medium and high speed does not have major discrepancies in values between recipes.

The standard mayonnaise recipe (R1) recorded a value close to each mixing time and speed, approaching the ideal mayonnaise value of ρ = 0.925 g/cm3

The closest recipe to the ideal pH value of mayonnaise (4.5) is the whole egg mayonnaise recipe (R4), which has a value between 4.15 and 4.39, with a maximum of 4.65 at 80s mixing time.

Standard mayonnaise recipes (R1) and mayonnaise recipes with low egg content (R2) show no changes during mixing, having similar and close values.

Physical stability was considered to be the period when the emulsions did not show separation of the visual phase. All samples were stable, the emulsions did not show separation of the visual phase after 7 days. The amount of oil dispersed in mayonnaise contributed to the viscoelastic behavior and stability.

CONCLUSIONS

The standard recipe (R1) is best suited to obtain a high quality mayonnaise. The whole egg recipe (R4) comes close to the qualities of the standard recipe, but does not contain a sufficient amount of emulsifiers. Both the low egg yolk (R2) and the yolk powder (R3) recipes suffer from the reversal process in the emulsification phase. The viscosity, density and pH of the four recipes are influenced by the speed and mixing time.

The stability of these samples does not change, the recipes having the same texture and color during the 7 days at room temperature.

With the increase of the mixing speed, the formation time of the mayonnaise and the viscosity decrease, also the increase in volume determined by the incorporation of air which is in accordance with the density is lower.

Therefore, it is recommended to take into account the time parameter, which increases with decreasing mixing speed, but at the same time favors the incorporation of air, improves the viscosity of the finished product, and therefore its sensory and commercial quality.

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IDENTIFICATION OF LISTERIA MONOCYTOGENES BY THE CULTURAL AND MORPHOTINCTORIAL NATURE

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Abstract
Listerias are widely in the nature. They were isolated from the soil, water, drainage, plants, vegetal material in decomposition, fodder. L. monocytogenes stood out in the raw food or with insufficient thermal cooking (meat, meat products, fish, shell fish), vegetables, dairy products, and in human or animal healthy carriers. The Liseria type includes gram-positive bacillus, short, with round ends, disposed in palisades or in chains. In old cultures they can appear under the form of long filaments. They are non- sporulated, non-capsulated, discretionary anaerobe mobile at 28ºC. Listeria monocytogenes has a coccobacillary form. Listeria monocytogenes is a pathogen microorganism, with discretionary intracellular habitat. The virulent strains elaborate a hemolysin, listeriolysin O. Other factors of virulence, beside their capacity of intracellular survival, and their wide spread, have a special importance in pathogenesis. Their special capacity to develop or survive in conditions of refrigeration, compared to the main other microorganisms, make the Listeria monocytogenes represent a significant challenge for the area of food production.

Keywords: anaerobe, virulent, filament

INTRODUCTION

The infections with germs of the Listeria type can appear under the form of some sporadic cases or epidemic outbreaks. The last epidemic outbreaks suggest the fact that the listeriosis is in fact a food poisoning, the most frequent way of transmitting the disease being in the present by food.

The most frequently involved food in the epidemic outbreaks is the cabbage, milk, cheese, chicken, turkey, milk, pate, pig tongue, mushrooms etc.

The most severe form of listeriosis is however the maternal-fetal one, not for the mother but for the fetus or the newborn. This can make a precocious form of infection, that is manifested under the form of a generalized septicemia with approx. 40-50% deadly cases, either under the form of late syndrome (7-15 days from birth), characterized by a meningeal syndrome, digestive manifestations and seldom conjunctivitis. Other clinical form signalized in adults and the child at an old age (especially in those with immune-depression: leukemia, infections with HIV virus) are represented

by meningitis, encephalitis, or even septicemias, with a high rate of mortality or with neurological sequelas among the survivors. There were reported also primary cutaneous listeriosis, arthritis, osteomyelitis, intra-abdominal abscesses, peritonitis, pulmonary infections especially in veterinaries and workers from slaughter houses that came in contact with the tissues infected of the sick animals. The diagnosis of laboratory is bacteriological. The serological one can have a value in epidemiologic context.

The pathologic products are harvested depending on the form and localization of the infection: CSF, blood, amniotic liquid, tissular fragments, vaginal secretions, respiratory, tegumentar samples, food samples, salubrity samples etc. and don't need special conditions of transport. In case of prolonged transport the pathologic products will be kept at 35°C in incubator (but not over 48 hours), and for testing that are over 48 hours, the pathologic products will be kept in the refrigerator (at 4°C) or in deepfreezer at -20°C), for the purpose of preventing the contamination with other microorganisms.

MATERIAL AND METHODS

The analytical study was accomplished on pathological products coming from exudates, excrements.

These being the products it was used the technique of seeding for the isolating and identification of Listeria, accomplishing of Gram colored smears from the microbial culture.

1. The technique of seeding for the isolation and identification
   Preparing the necessary material
   - The plates are taken from the refrigerator, are left to reach the room temperature and to get dry in the hood with laminar flow for an hour, with the lid half open
   - The seeding is accomplished in the hood with laminar flow

Method of work

- For each sample it is preferred to have a culture plate
- In a sector of the plate is discharged the loop
- The inoculum is finished with sterile loop tracing parallel lines in the other three scales from the respective half of the plate, seeding thus two bumpers on the plate
- The plates thus seeded are hatched in the thermostat 24 hours, at 37℃.

2. The accomplishing of the Gram colored smear
   - It is written on the slide the ID no. of the sample, on the frosted part

- It is placed a drop of physiological serum on the middle of the slide
- It is taken with a sterile ansa a colony of the culture of microorganism to be identified and is placed a drop of serum
- With circular movements of the ansa is created a microbial suspension on the slide, that is spread in a layer as this as possible
- It is left to dry approx. 20-30 minutes
- It is Gram colored as the following:
- The product is fixed passing it through a flame a few time
- It is placed on the coloring bath
- It is colored with a solution of gentian violet or crystal violet for 1 minute
- The colorant is poured and the product is washed with drinking water
- The slide is covered with solution of Lugol for 1 minute
- The colorant is poured and the product is washed with drinking water
- The slide is washed out with a mixture of decolorant alcohol-acetone, by pouring until the poured liquid becomes colorless
- It is washed with drinking water
- It is colored with safranin 2-3 minutes
- The slide is washed with distilled water, it is dried and is examined under the microscope.

RESULTS AND DISCUSSIONS

After 24-48 hours of incubation at 35-37℃ the colonies of Listeria have the diameter of 1-1,5mm on the glucose 2% and only 0,2-0,4 mm on the tryptose agar 1-2%. They are round, smooth, easily gibbous, transparent with the aspect of the tear drops. Their center has a glass crystalline aspect, with watery consistency. Examined in the oblique light, at 45º, they appear with blue-green iridescence.

The germs from cultures in the “S” phase are disposed on the smear isolated, grouped in palisades, and for those of “R” phase, appear more frequently coccobacili disposed in short chains of 3-5 elements.

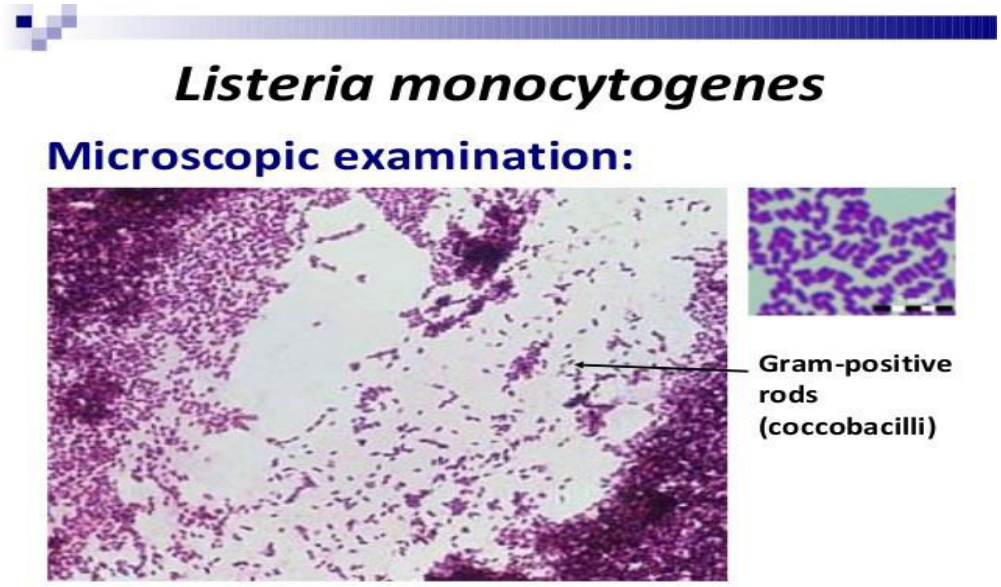

Fig. 1. *Listeria monocytogenes*Grame positive

Fig. 2. *Listeria monocytogenes* Grame positive

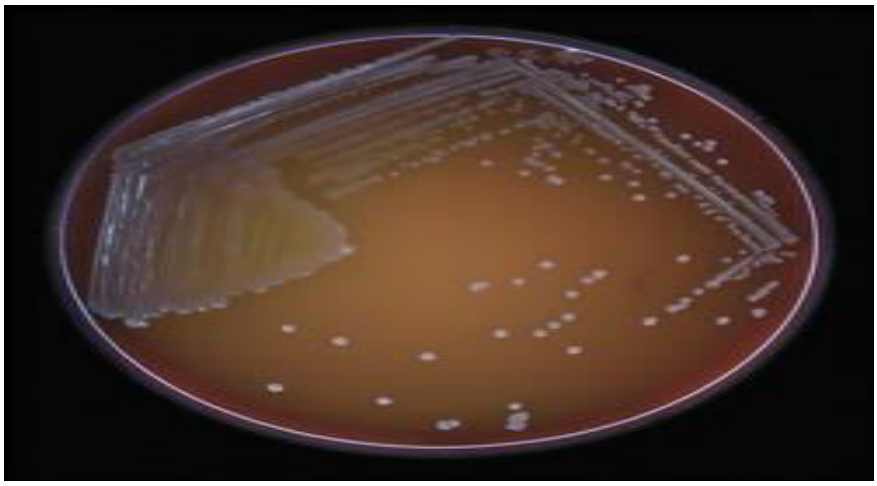

Fig.3. *Listeria monocytogenes.* Blood Agar Culture 24 hours

The isolation from the contaminated pathological samples is difficult, it seeds a part o sample in 9 parts of broth of enriching with nalidixic acid.

The listeria are short bacilli, right or curved, most of the times with coccobacilar or cocal form, with round ends and dimensions of 0,5-2µm length and 0,8µm depth, in the pathologic samples they appear either extracellular or phagocyte, the indubitable test o listeriosis.

In the young cultures, incubated at 35-37°C, are dominating the short forms, coccobacilar, while in the old cultures the polymorphism appears, most often with long filament forms of 6-20µm similar to lactobacilli. They are colored gram-positive on the smears accomplished from young cultures and can be gram-negative in the old cultures. In a prolonged discoloration, of over 5 minutes, over 50% of the germs, even those coming from young cultures, can become gram-negative.

The colonies of the rugose forms have the matt center, are large, oblate, with irregular margins, with central crateriform depression, friable, hard to be emulsified. After the pricking-out the colonies of Lisyteria have left “imprints” on the agar.

On agar with 5% ram blood, the colonies of Listeria monocytogenes are surrounded with a narrow area of β diffuse hemolysis and those of Listeria seeligeri are weakly hemolytic. And those of Listeria *ivanovii* form a wider area of β hemolysis, that after 36-48 hours have the aspect of double or even triple hemolysis.

The cultures of Listeria monocytogenes on solid medium have spread a characteristic smell of acidulate milk. In the semi-solid mediums as the agar 3‰, after the seeding by stinging and incubation at the room temperature, Listeria monocytogenes grows under the form of an umbrella at 3-5 mm from the surface of the agar proving an important mobility.

Other methods that were used for the detecting of the species of Listeria, were showed up in the study "On the Specificity of PCR Detection of *Listeria monocytogenes* in Food: a Comparison of Published Primers", made by R.Aznar[ab],B.Alarcón[ab]. First of all the authors have accomplished a polyphase approach to establish a collection of reference strains. These were characterized biochemically and genetically by API-Lis and PCR, polymorpheus randomly amplified (RAPD-PCR), respectively. The random amplifying of DNA was accomplished with the universal primers M13, T7 and T3 and was created a data bank in order to compile the RAPD patterns of all the analyzed strains. The analysis of the UPGMA cluster of the RAPD profiles with primer M13 showed eight clusters with 72,3% similarity. The clusters 2 and 7 corresponded to L. monocytogenes. The clusters 1 and 6 groups of strains of L. ivanovii. The clusters 3, 4, 5 and 8 coresponded to L. grayi, L. innocua, L. welshimeri and, L. seeligeri, respectively. The analysis of the model has underlined the existence of the reference strains wrongly identified, which was confirmed by the analysis of the sequence of ADNc 16S. RAPD-PCR is a fast genetic test that helped the confirmation of the identity of the strains. Based on the results of the PCR specificity, the primers LM1 – LM2 were the best combination for the detection of L. monocytogenes because they amplified only the specific fragment in the strains that were evaluated genetically and biochemically as belonging to the species. The specificity of other primers analyzed is discussed.

CONCLUSIONS

For the differentiation of the Listeria type from other similar types it is tested the anaerobe discretionary growth, the mobility in the wet product or in the column of soft agar of the culture at the room temperature, the growth at temperatures between 2℃ and 42℃, the production of oxidase, catalysis, urease, H2S in the TSI medium, the fermenting of the glucose.

The identification up to the level of species is very important because all the listeria can contaminate the food, but only *L. monocytogenes* has clinical significance and exceptional L. *ivanovii* or *L. seeligeri*.

The hemolysis is essential for the differentiation of L. monocytogenes from L. inocua, because of the tight affinity of the nine species and overlapping of many phenotype kinds.

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STUDY RELATED TO THE QUALITY OF LABORATORY LYOPHILIZED FRUITS

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Abstract

Lyophilization is a procedure of preservation through drying which consists in eliminating the water from a previously refrigerated product, by sublimating it through vacuum (the water from the product transforms itself directly from solid estate into steams). Lyophilized products greatly keep their nutritional values having as well a longer period of availability.

By dehydrating the fruits after the lyophilization process a great percent of the fruits' properties are preserved (carbohydrates, antioxidants, mineral salts, fibres).

Lyophilized fruits are usually used in mixtures of cereals and fruits, like musli for breakfast or as they are, because they can be hydrated and eaten as one pleases.

Lyophilization makes the products dehydrated without them losing their nutritional qualities, only a very small amount of it and they also keep their flavor vey well. In what the nutritional substances are concerned, vitamins A, C and E are the most affected but they only suffer moderate losses.

The study related to the quality of lyophilized fruits has been performed in laboratory conditions for three species of fruits: raspberries, cherries and strawberries for which an organoleptic appreciation has been done and for which we have determined the weight before and after they had been lyophilized and for which the amount of C-vitamin has also been calculated.

Key words: lyophilization, lyostat, quick freezing, preservation procedure, sublimation

INTRODUCTION

The actual lyophilization is performed in three main steps: freezing, sublimation or primary dehydration and secondary dehydration or desorption. By freezing, the water which is under the form of ice crystals is separated, a process which is firstly initiated in the extra cellular fluid then the humidity from the cells migrate towards the ice crystals contributing to their dehydration. Then there is a controlled heating under vacuum conditions thus leading to the submination of ice, water being slowly eliminated under the form of steams, without melting.Through this procedure there is a minimum modification of the cellular structure or of the chemical composition. (Naghiu A. et all., 2005).

The technologic process of lyophilization starts with a quick freezing of the processed products after which the products are introduced on special plates, in the liostat. The latter is a special device like an autoclave equipped with heating and vacuum systems as well as with systems that quicly

eliminate the water steams. When enough quantity of a powerful vacuum has been reached the products subject to lyophilization are reheated to obtain the sublimation of water without the ice melting. During the whole lyophilization process the temperature and the dehydration pressure will be checked until the end of this technological process. (Mănditță D., 2002).

Through lyophilization fruits lose the greatest part of water that they contain without the cellular structure being affected and the components of the dry substance remain unchanged. Thus they become porous so that they can be easily rehydrated. Due to the porous structure the air contact surface increases which make the product be very hygroscopic, fact which needs special packing of the final product. (Gherghi A., 1999).

The final quality of a lyophilized product greatly depends on the product's initial quality. There are two common technical requests of all the food products that are about to be lyophilized: the first request refers to ensuring a volume/surface alance as big as possible which would ease sublimation and the second technical request refers to the way products are lifted up and loaded to the place the actual lyophilization happens. In this way, the distribution of products to the lyophilization place must be done uniformly in what the composition, the weight and the thickness of the loaded products are concerned. (Mintaș I., 2009).

Lyophilization as a method of preservation, presents certain advantages from the food products' quality point of view in comparison with other food preservation methods. The influences of lyophilization manifest themselves through modifications of physical , chemical and biochemical nature of the food products. One of the physical modifications that appear at lyophilized food products and which represents an advantage is the decrease of weight after lyophilization which varies according to the product between 50-90%. (Mintaș I., 2009).

Lyophilized products keep the assembly of their sensorial properties very well (texture, taste, smell). The lyophilized product keeps its initial form, does not make foam, does not contract, there are no local concentrations of certain local soluble fractions. (Banu C., 1992).

In compasrison with the products dried through other methods, lyophilized products can be much more quickly and completely rehydrated. The quality of rehydration depends on a series of conditions as for example the quantity of water, the water's pH, the temperature and the duration of the process. (Niculiță P. and N. Purice, 1986).

After a food product has been lyophilized there is usually a modifiation that appears in the product's texture in comparison to the initial product. This modification is more obvious or less obvious according to the product, to the freezing method and to the conditions in which the actual freezing of the product took place. A quick freezing generally offers the

product a good texture while a slow freezing destroys the product's texture and after the rehydration the product is usually slack. (Niculiță P. And Mona Popa).

The most spread method of drying is that of the convection to atmospheric pressure. (drying with hot air). During drying with hot air, the air itself is the vector which supplies the surface of the product with energy and the vector which removes the water vapors.(Banu C., 2008).

When drying through lyophilization the main inconvenient consists in the energy consumption which is a few times bigger then the one realized at the classical dehydration technologies. For lyophilization we use very expensive raw materials which are also very perishable like the following: citrus fruits, fruits and vegetables with a hig content of vitamins. This dehydration method is definitely superior to the other commonly used methods. Lyophilized fruits can be easily rehydrated regaining their form, value, flavor, color and other sensorial features. (Banu C.,2009).

MATERIAL AND METHOD

In order to analyse the lyophilized fruits we have taken 3 samples of fruits belonging to 3 different types of fruits: raspberries, cherries and strawberries.

The 3 samples of fruits analyzed have been conditioned, put in glass bowls and weighed. For the fruits studied we have determined the quantity of soluble dry substance and the content of C vitamin.

In order to appreciate the quality of the laboratory lyophilized fruits with the help of the ALPHA 1-4 LdpPLUS lyophilizer, after 12 hours of dehydration we have continued by determining the final weight, by determining the content of C vitamin and by appreciating the organoleptic quality of the obtained lyophilized fruits.

In order to determine the content of C vitamin from the fresh and lyophilized fruits we have chosen the titrimetrical method based on treating the product with a solution of dichlorophenol indophenol.

The volume of dichlorophenol indophenol used in the sample case and the content of C vitamin from the analyzed lyophilized fruits is presented in table 1.

Table 1

Content of C vitamin in lyophilized fruits

Lyophilized fruits	V DCPI	mg vit C/10 ml	mg vit C/100 g	xdilution
Raspberry	2,5	0,011666667	11,66666667	1166,666667
Cherry	3,0	0,014047619	14,04761905	1404,761905
Strawberry	3,5	0,016428571	16,42857143	1642,857143

In order to quantify the results we have realized a calibration curve with a standard solution of C vitamin, of 0,05% concentration. The obtained calibration curve can be seen in fig. 1.

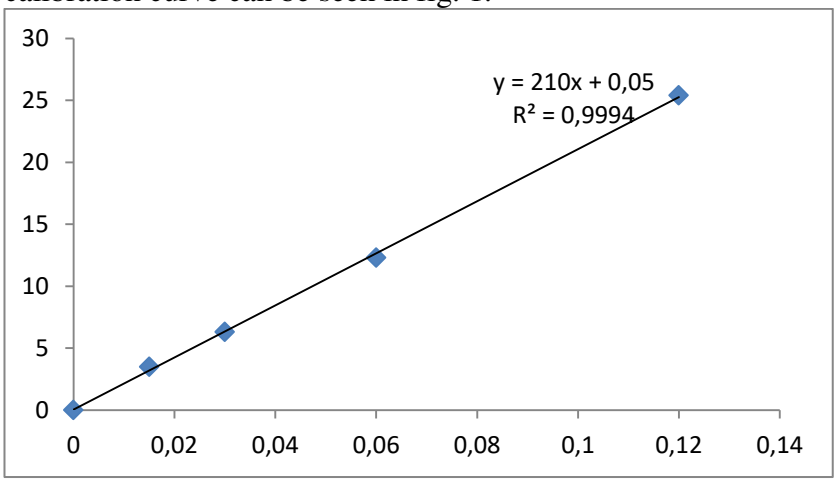

Fig.1. Calibration curve of the ascorbic acid.

RESULTS AND DISCUSSIONS

1.Appreciation of the organoleptic characteristics

The organoleptic characteristics of the three samples of analyzed lyophilized fruits are presented in table 2.

Table 2

Organic characteristics of the lyophilized fruits

Characteristics	Type of fruit		
	Raspberry	Cherries	Strawberries
Aspect	Whole fruits, of close size	Fruits divided into halves, non uniform size	Fruits divided into pieces, uniform size, present traces of juice
Color	Pink-raspberry like,close to the color of the fresh fruit	The skin is dark, blackish, easily wrinkled and the pulp is yellowish	Dark red
Consistency	Hard	Elastic pulp	The pulp is elastic
Taste and smell	Pleasant,specific	Pleasant, specific	Pleasant, flavored, specific

Organoleptically the raspberries have behaved the best during the lyophilization, they have remained whole and they had a red-raspberry color, like the fresh raspberries; the cherries have remained non-uniform due to their skin which prevents the uniform elimination of the water from the cellular structure and the skin remained wrinkled; the strawberries which have been divided are uniform in shape and color but when they were cut

their pores and capillaries have been sectioned and once the water evaporated then part of the cellular juice has also vanished.

- **Determining the weight of the lyophilized fruits**

The data obtained when weighing the three species of lyophilized fruits and the content of soluble dry substance of the fresh fruits are mentioned and written in table 3.

Table 3

The dry substance and the weight of the analyzed fruits

Criterial number	Fruit	Soluble dry substance ^{o}Brix	Initial weight g	Final weight g	The dehydration degree
1.	Raspberry	11,1	25	7	3,5
2.	Cherry	10,8	25	6	4,16
3.	Strawberry	6,2	25	4	6,25

We have started the study from a weight of 25 g for each of the studied fruits: raspberry, cherry and strawberry. After the lyophilization the raspberry reached 7 grams, with a degree of dehydration of 3.5 times; the cherries reached 6 g after lyophilization and a degree of dehydration of 4,16 times; and the strawberries reached 4g after the lyophilization with a dehydration degree of 6,25 times.

It can be noticed that the dehydration degree is closely related to the soluble dry substance that the fresh fruits had previously contained. When the content of soluble dry substance increases then the dehydration degree decreases.

Thus the raspberry which had the highest content of soluble dry substance – 11,1^{o}Brix, presents the lowest dehydration degree of 3,5 times, the cherries which had a content of 10,8 ^{o}Brix soluble dry substance had a dehydration degree of 4,16 times and the strawberries which had the lowest content of soluble dry substance, of 6^{o}Brix, have the highest dehydration degree, of 6,25 times.

2.Determining the content of C vitamin

The data obtained when determining the content of C vitamin from fresh fruits in comparison to the content of C vitamin at the lyophilized fruits are presented in table 4.

Table 4

Content of C vitamin for fresh fruits and for lyophilized fruits

Criterial number	Fruits	Content of C vitamin for fresh fruits mg/100g	Content of C vitamin for lyophilized fruits mg/100g	C vitamin storage degree
1.	Raspberry	17,33	11,66	67,28
2.	Cherry	22,14	14,04	63,41
3.	Strawberry	27,25	16,42	60,25

Through the lyophilization of the three samples of analyzed fruits: raspberries, cherries and strawberries the content of C vitamin in the fresh fruits has been the following: in the case of the raspberry the content of C vitamin of the fresh fruit has been of 17,33mg/100g, and after the lyophilization the content reaches 11,66mg/100, which represents a C vitamin storage degree of 67,28%; the content of C vitamin at cherries decreases from 22,14 mg/100g to 14,04 mg/100g, and there is a C vitamin storage degree of 63,41%, and in what the lyophilized strawberries are concerned the C vitamin content decreases from 27,25mg/100g in the case of the fresh fruits to 16,42 mg/100g in the case of lyophilized strawberries and representing a C vitamin storage degree of 60,25% .

Out of the three species of analyzed fruits: raspberries, cherries and strawberries it can be noticed that the raspberries have kept the C vitamin the best after the lyophilization, in a percent of 67,28% and this fact happened because the fruits have been whole, they have kept their form even after the lyophilization in comparison to the cherries which have been cut into halves and in comparison with the strawberries which have been cut into small slices and which have had a surface with bigger pores and capillaries, thus allowing the oxidation and the loss of C vitamin.

CONCLUSIONS

Lyophilization is a process of drying very quickly previously refrigerated food products by eliminating ice with a forwarded vacuum, meaning by the process in which water directly goes from solid form into vapor form.

Lyophilization is used in food industry in order to obtain: coffee, tea extracts, vegetables, fruits, meat, fish. Lyophilizated products represent 10-15% of their initial weight and they do not need to be kept refrigerated.

Lyophilized fruits present different characteristics, the raspberry which was whole has got a homogenous form, of pink color, with pleasant smell and taste, well expressed, without caramel taste; cherries which have been divided in two have got an irregular form, their skin is dark-blachish, the pulp is bluish with a pleasant taste and smell and the strawberries which have been divided in slices have got homogenous form, they have red color, pleasant and specific taste and smell, without caramel taste and smell.

In what the content of C vitamin is concerned for the lyophilized fruits, this is kept in a percent of 60-67%, which, if associated with a lower content of weight, leads to an advantage of the preservation method and presents a high interest of using these types of food products.

As a method of food processing and preservation lyophilization offers a series of advantages related to the fruits' quality and to the preservation acceptable time period when the fruits are lyophilized but the production

costs are higher, overpassing enormously the specific energy consumption in comparison with other processing and preservation technologies.

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PATHOGENICITY AND ANTIGENIC STRUCTURE OF PROTEUS

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Abstract

The Proteus type are ubicuitary germs spread in the nature, being found in the soil, waste water, surface water, in the organic matters in putrefaction, in the human intestinal tube, in the food and in the pathologic products. Being germs spread very much in the nature, the infections with this microorganism depend on the immunologic status of the host, on the virulence of the incriminated strains, on the control of the infections and of the food.

The proteus ferments the glucose with a bit of gas and produce H2S phenylalanine deaminase. It doesn't ferment the lactose, don't produce lisindecarboxilase and β galactozidase. On the agar nutritive media 2%, without inhibitors it presents the phenomenon of invasion or migration, characteristic to the type.

All the species of Proteus are frequently met in the nature and among these Proteus vulgaris and Proteus mirabilis pretty frequent also in the human pathology. Proteus mirabilis is after E. Coli the etiologic agents most frequently met in the urinary infections and Proteus vulgaris was incriminated in the urinary infections but especially in gastroenteritis with aspect of food poisoning. P. Vulgaris is isolated frequently from the stool, being a component of intestinal microbiota.

Keywords: microbiota, gastroenteritis, food poisoning.

INTRODUCTION

The genetic identification of the colonies isolated on selective mediums is a perspective of wide applying in the establishing of the species. Pathogen conditioned, *Proteus* can outburst, alone or in association with other pathogen agents, infections on different levels of the host organism. Also it causes infections of the digestive tube, food poisoning and enteritis in newborn and small children, infections of the inferior respiratory tube, pneumonia is most of the times nosocomial.

The infections of the inferior urinary tube are represented by cystitis. In patients with urinary lithiasis, *P. Mirabilis* was frequently isolated in urine, the recurring bacteriuria being a complication without a solution for these ill people. The capacity of the *Proteus* bacteria to decompose the urea play a very important role in the inducing of the urinary lithiasis. The urease hydrolyzes the urea to the ammonia and carbon dioxide. The alkanizing of the urine by the increasing of the level of ammonia determines the suprasaturation of the phosphate magnesium and of the phosphate calcium and their crystallization forms calculi. The bacteria inside the lithiasis are refractory to the antibiotics treatment. The lithiasis with large dimensions

can affect the kidney function. The increase of the level of ammonia in the urine, due to the hydrolisis of the urea in the presence of urease, can produce also lesions of the epithelium of the urinary tube.

The resistance to the physical and chemical factors of the strains of Proteus is similar to the other enterobacteriacae. It can resist for a longer period in some antiseptic solutions, of detergent, and in perfusable solutions, in those that include glucose being able to multiply at the room temperature, this explaining the diffusibility of the bacteria in the hospital medium. The resistance to antibiotics of this bacteria is very large.

Proteus are bacilli gram negative, polymorphous, don't present capsule or spores. They are not demanding germs and on the simple agar and blood agar have a unique characteristic in the *Enterobacteriaceae* family to invade the medium, phenomenon named "phenomenon of escalade". From the place of inoculation, successive waves of culture migrates concentric up to the edge of the medium or up to the meeting of a migratory wave of another colony. If the migratory colonies belong to the same strain, the waves are intricating, forming a continuous web. If they belong to different strains, even from the same species of *Proteus*, the migrations are stopped at a distance of 2 mm, between them being traced a line of marking, phenomenon known also with the name of "Dienes phenomenon". This represents an important epidemic marker on the selective mediums that include biliary salts. *Proteus* grows under the form of S colonies, smooth, round, translucent, lactose-negative, with the color of the medium in "cat eyes".

MATERIAL AND METHODS

The analytic study was accomplished on pathologic products coming from excrements, performed at the Diaser laboratory, Oradea.

These being the products, it was used the technique of seeding for the isolation and identification.

Collection and transport of samples

The collection has to be made as close to the beginning of the disease and before the beginning of any antimicrobial treatment.

• The collection from the stool made spontaneously – it is preferred and is indicated in all the forms of acute diarrhea when the emission of excrements is frequent.

• For bacterial and parasite examinations, the collection is made with the "spoon" of the coproculture tube, concerning the liquid parts and especially, those mucous and/or sanguinolent, if they exist. The volume of the collection has to be of minimum 5 ml or 3-5 cm^3, if the stool is formed[3].

• For the isolations or virological exams is collected 5-10 cm^3 of excrements or minimum 5 ml, if the stool is not formed[3].

• The rectal collection – is recommended in:

– chronic shigellosis, where the curettage of the rectal mucous with the probe or the tampon offers greater chances to the isolation;

– the investigation of the carriers of *Shigella* and *Salmonella*, with the exception of the those with S. Typhi.

For this type of collection are used Nelaton probes (no.14-16) or adequate tampons, as the following: with the tampon, wet in saline isotone solution (not to be used lubricant gels), is penetrated the anal sphincter by slow rotation, introducing in the rectum approximately 15 cm. It will proceed identically also with the Nelaton probe, to which is adapted a syringe (10 ml) used for 1-2 aspirations. After the collection, the probes and tampons are introduced in sterile recipients that contain preservation medium, are labeled correspondently and are sent to the laboratory.

The *transport* of the samples and their processing is made in maximum 1h, if they were collected in recipient without medium of transport (with transport at the room temperature), or can be kept up to 24h at room temperature, if they were collected in recipients that contain *Cary-Blair* medium of transport which assures a good viability of the bacterial intestinal pathogens. An exception to these rules are the samples collected for the suspicion of infection with *Shigella spp, very sensitive bacteria, which needs seeding on the culture media immediately after collection*[3;4] . *For the viral etiology, the samples that are not processed immediately have to be kept at* – 70°C[3] .

The isolation of the aerobe bacteria

• It is seeded the sample on two culture media, one weakly selective (Mac Conkey) and one moderately selective (Hektoen) and is incubated 24 h at 35-37ºC, following the cultures at 24 and 48 h for the appearance of characteristic colonies. For the *Vibrio* type, the recommended selective medium is BSA (bile salts agar), and for yeasts – the Sabouraud medium with Cloramfenicol.

• In order to increase the chances of isolation, the sample is sub cultivated on media of enriching that favors the multiplication of the pathogen (ex. selenite broth sodium acid for *Salmonella spp*., alkaline peptone water or broth with taurocholate and peptone at pH=8,0-9,0 for *Vibrio* where, after incubation can be made smears and cultures from the superior part of the medium). It is incubated 24 h at 35-37°C, then are made transmissions on the culture mediums.

• The colonies characteristic to each type will be transplanted in order to identify on the level of species and agglutination with specific serums.

RESULTS AND DISCUSSIONS

The *Proteus Mirabilis* colonies present a remarkable geometrical regularity. The microbiologic methods and the basic imagery techniques were used to measure the periodic macroscopic events in the morphogenesis of the migrating colonies, of escalade. We distinguished three initial phases (the phase of lag, the first phase of full and the first phase of consolidation), followed by the repeating of the further cycles of the consolidation phases, plus the consolidation. Each colony of *Proteus* corresponds to a cycle of swarming-plus-consolidation.

Fig. nr. 1. *Proteus mirabilis*.

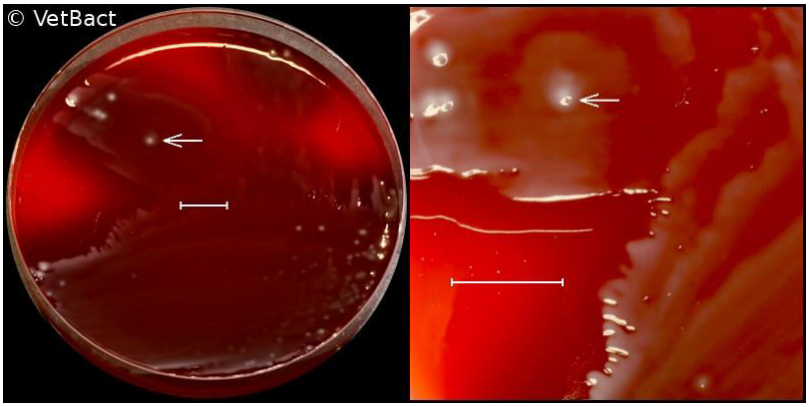

Fig. 2. *Proteus mirabilis*.

The duration of the phase of lag was dependent to the density of the inoculation in a way that indicates the functioning of the multicellular effects of cooperation and inhibition. On our standard medium, the second and the further phases of the colony, it appears a structure with the form of internal waves visible with reflected illumination and darkness-field.

These internal waves have resulted from the organizing of the migrating bacteria in successive cohorts, thinker of the heated cells. The bacterial growth and motility were modified independently by the modification of the composition of the growth medium. By the variation of

the concentration of glucose in the substrate, it was possible to be modified the production of biomass without affecting very much the kinetics of the extending of the colony surface. By the variation of the concentration of agar in the substrate, the initial production of bacterial biomass was not affected, but the dynamics of extension of the colonies was modified significantly. The greater concentrations of agar lead to slower phases, shorter, of the migrating colonies and the consolidation phases were longer.

Thus, the growth of the colony was limited by the greater concentrations of agar, but the wider view calendar of the cycles of consolidation-plus-consolidation remained constant. No variety of factors that had significant effects on the expansion of the colonies did alter the frequency of terraces at 34 ºC, but the length of the cycle of swarming-plus-consolidation was affected by the temperature and average enriching. Some clinical isolations presented significant differences in terraces at 34 ºC. The results have defined a number of parameters easily quantifiable in developing the colonies. The data did not show any connection between the running down of nutrients (glucose) and the beginning of different phases in morphogenesis of the colonies. More observations indicate the functioning of the thresholds dependent to the density in the control of the transitions between the distinct phases.

Proteus vulgaris, cultivated on agar that contains penicillin, suffers extraordinary morphological modifications, that vary depending on the temperature of incubation, the concentration of penicillin, the concentration of agar and the presence of small quantities of liquid between agar and the sliding-lip. The bacilli can be divided normally once or twice in elements that grow without division and which can develop in form of fantastic thread or inflated. In great concentrations of penicillin the fantastic forms are obtained by extending without division. In the beginning, the nuclei are divided as in the normal organisms. The forms of thread have nuclei condensed arranged in alternative model along the side of the cells. In inflations can be either nuclear material of cell inflating, a condensed central mass or a Reticulum. When the vacuoles are present, they replace the nuclear material.

The motility of the very wide organisms is slow and the flagella movement can be observed clearly by contrast of phase. The movement of the flagella of the organisms responds easily to the radiant heat and a careful study of these movements makes it impossible the accepting of the Pijper affirmations that the bacterial motility is due entirely to the wavy movements of the body and the flagellation is only for the mucoid threads following the motility.

In the study "A CYTOCHEMICAL LOCALIZATION OF REDUCTIVE SITES IN A GRAM-NEGATIVE BACTERIUM", accomplished

by Woutera Van Iterson, W. Leene they made a microscopic study of electrons of the sites of reduction of the cellular activity, which, in the life style, have incorporated tellurite. in the testing object *proteus vulgaris*, the reduced tellurite proved to be stored in contiguous bodies with plasmatic membrane, but different in structure to those described in the bacilli gram-positive (2). in fact the organisms proved to be composed on a conglomerate of elements that contained strong electrons-scattering reduced tellurite and a delicate granular "matrix". A limiting membrane was not observed around these complexes. In the serial sections the details of the complexes are presented.

The reduced tellurite was not stored in the plasmatic membrane at any important degree. Because there were no other places of deposit of the reduced products unveiled, it is presupposed that the complexes represent the mitochondria equivalents of the investigated organism. Moreover, the bodies could function as basal granules of the flagella.

CONCLUSIONS

Proteus vulgaris, cultivated on agar that contains penicillin, suffers extraordinary morphological modifications that vary depending on the temperature of incubation, penicillin concentration, agar concentration and the presence of small quantities of liquid between agar and sliding lid. The bacilli can be divided normally once or twice in elements that grow without division and which can develop in form of fantastic thread or inflated. In great concentrations of penicillin the fantastic forms are obtained by extending without division. In the beginning, the nuclei are divided as in the normal organisms. The forms of thread have nuclei condensed arranged in alternative model along the side of the cells. In inflations can be either nuclear material of cell inflating, a condensed central mass or a Reticulum. When the vacuoles are present, they replace the nuclear material.

The bacterial growth and motility were modified independently by the modification of the growth medium composition. By the variation of the concentration of glucose in the substrate, it was possible to be modified the production of biomass without affecting very much the kinetics of the extending of the colony surface. By the variation of the concentration of agar in the substrate, the initial production of bacterial biomass was not affected, but the dynamics of extension of the colonies was modified significantly.

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DECENTRALIZATION OF THE HOSPITAL MEDICAL SERVICES AT THE ORADEA MUNICIPALITY LEVEL

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Abstract
The entire world dynamic regarding decentralized medical services is continuous and depends on geopolitical, environmental and organizational changes in the context of local governments and public service provision. Health restructuring is usually done to make services fairer and more efficient. Most of the times, responsibility transfer from governmental level to local authority level, regional or other non-national structures did not foresee many of the problems that may arise. For Oradea, respectively Romania, did decentralization represented a real solution for the efficiency and development of hospital health services? National authority (Romanian government through Health Ministry) did it always transmitted the related budget, the know-how and the related specialists to the local authorities to help the implementation of the effective and real decentralization of the hospital medical services?

Key words: centralization, decentralization, efficient health services;

INTRODUCTION

The reform of hospitals in European countries started 30 years ago, with the aim of reducing the pressure on local budgets and increasing the adaptability of hospital services to local needs.

Decentralization, per se, is a gathering of local authority closer to the people and to their immediate needs (Smith 1985, Work 2002). Thus, the local community can participate and influence the decision making, becoming directly involved in the political decisions that influence the health services at the local level.

Decentralization is in fact a long-term process, in a continuous change on different levels. It represents a social and political process through which the authority and responsibilities are redistributed at national and local level. Thus, a "negotiation" takes place between the authorities in whom the governmental institutions consider that the local authorities are the best suited to an assumption of local interests and needs.

The reasons for decentralization were different in countries around the world, for example:

- In the former socialist countries (Czech Republic, Baltic Countries, Poland) decentralization represented a way of collapsing and inhibiting the leadership style in a centralized system;

- In Russia and Bosnia decentralization had the role of removing states of ethnic conflict;

- In Latin America decentralization was seen as a process of democratization and appeared with the democratic elections.

In many countries of the world, decentralization acted as a public service provider in order to create a system of good governance, aiming to develop local institutional capacity, eliminating corruption and as well as reducing inequities and poverty.

Currently, medical hospital services at worldwide, european and national level are facing real challenges that are in a continuous dynamic.

Some health systems that were decentralized represented a rapid failure as a result of the non-compliance with the operating principles of the decentralized system. Not always, the principles of universality, equity, opportunity and responsibility in the health field and well-being of the population could be respected in the provision of hospital medical services.

MATERIAL SI METHOD

In carrying out this study, the main working method is the "analysis method", but also "comparison method". The data's are obtained from official documents released by local public administration authorities of Oradea (provisions and decisions of the local Council of Oradea Municipality), of the Ministry of Health-Order of the Minister.

RESULTS AND DEBATES

The reform of the public hospitals, in Romania, started in 2002 when they were transferred into the patrimony of the territorial administrative units and in the administration of the local authorities, the buildings of 48 hospitals and polyclinics and of more than 150 hospitals in the rest of the country. The transfer allowed (optional) financing from local budgets for repairs, investments and operating expenses, but it was not accompanied by attributions regarding the management of the health units. This transfer was not accompanied by the supplementation of the revenues of the local budgets, so this first attempt of decentralization did not lead to positive results at the system level (Ministry of Health, National Rationalization Strategy for Hospitals).

In 2008, the management of 18 hospitals in Bucharest and 4 in Oradea was transferred to the city halls of the two municipalities, which gave the right of the local authorities to approve the organizational charts, function states and budgets of the respective hospitals.

In the period between January 2010 and July 2010, Romanian Gouvernment established a program to monitor the negative and positive

effects of the decentralisation of hospital medical services in Romania. The political-administrative context at Romania's level, at that time, was favorable. Romania had a young ministry, with vision, whose mandate was extended from November 2009 – August 2011. Thus decentralization was done at a favorable political moment, with people open politically and administratively towards new systems of coordination and governance, much closer to the citizen.

A conclusion emerging at the end of the pilot phase of decentralization in Oradea was referring to the fact that the local hospital health services are of poor quality and do not respond to the immediate needs of the citizens. It was imposed like this, in 2009, a correct assessment of population health. In order to be able to provide medical services corresponding to a local community, from a well-individualized geographical area in space and correctly identified numerically, you must take into account the health needs of the population, and the medical services must be adapted to these needs, and the evaluation needs to be made by specialists who have specific working tools. Thus, an assessment the state of health and well-being at the level of a properly designed and interpreted local community, definitely leads to the possibility of adaption the offer of hospital medical services to the real needs of the population. The evaluation was made according to certain factors, such as: age, communicable and non-communicable diseases, environmental factors, wage incomes, number of family members to which they belong, workplace, etc. Subsequent to this assessment of the health of the local population, prepared at the level of the Bihor Public Health Directorate and transmitted The Ministry of Health, the City Hall of Oradea Municipality, through the specialized structure of the Hospital Management Department, was able to develop a public health policy, at the level of two public state sanitary units from the own Medical Network of Oradea Municipality.

For example, following this evaluation, as well as the finding of the existence of widespread diseases in the area of Oradea, but also in Bihor County, the City Hall of Oradea initiated and finalized the construction of a Regional Oncological Center within the Municipal Clinical Hospital dr. Gabriel Curteanu Oradea (with oncology, radiotherapy, hematology and specialized medical departments).

Collins (1996) saw decentralization as a mechanism or an approach that would reform the institutional paradigms.

I believe that this definition of "decentralization" is valid for Romania as well. The vision of health at national level regarding hospital medical services had to be adapted to the needs of each local community.

In addition to the transfer of responsibility, from the Governmental level to the local level, decentralization involves three options: political, administrative, fiscal.

Decentralization in the "political" form is a smart move, especially in countries where there are multiple entities, which thus become involved in making decisions that influence their "daily" lives. In a centralized system, these minorities do not participate in any form in making political decisions, which, in most cases, are in the hands of a majority. Regarding the medical services in Oradea, this" political option" is manifested by the fact that the Mayor of Oradea Municipality, elected directly by the citizens by vote, is the head of the hospitals in Oradea's Municipal Medical network. In case of the citizens of the city are dissatisfied with the organization and functioning of the hospitals in Oradea, they can politically sanction the "head of hospitals by direct vote.

Decentralization, as an "administrative" option, can be referred to as Delegation or Deconcentration.

Deconcentration, as the "administrative" form of decentralization, represents a dispersion of its responsibilities, from the level of national institutions to the level of local specialized institutions. In Romania, a deconcentration of the medical services, would have supposed a transfer of the attributions from the level of the Ministry of Health to the level of the County Public Health Departments. Delegation as a form of decentralization represents the transfer of powers from the level of governmental institutions to the level of local institutions, or of semi-autonomous institutions, which can make public services more efficient.

Decentralization, as a "fiscal" option, represents the assumption of the transfer of financial resources absolutely necessary for the exercise of the powers transferred from national to local level.

In this regard, although in Oradea were subordinated to the City Hall of Oradea, all hospitals, which are currently being reorganized into two major state public hospitals, the predominant funding is from the National House of Public Health.

Hospitals financing has not been decentralized, but on the contrary, resident doctors from Oradea's hospitals remain funded by the Ministry of Health. The resident doctors, with and by job, are established following a national exam and the positions are established at the level of the Ministry of Health. The positions of resident physicians should be submitted according to the demands of each local community.

Hospital decentralization in Oradea, represented a complex process, which involved three important factors:

- Negotiation between the parties (the Romanian Government and the City Hall of Oradea);

- Knowledge transfer;
- The ability to adapt of the City Hall of Oradea, as well as the determination with which it will exercise its attribution.

At the level of Oradea's Municipality, a political and administrative decentralization took place, thus the Romanian Ministry of Health has ceded part of its own attributions to the Oradea City Hall. The political attributions were transferred to the Local Council Oradea. Local councilors are emanations of political parties, so any use of the local council is political in nature.

However, the Local Council is an administrative institution so all the decisions have administrative character. As regards to fiscal decentralization, it has not been implemented in Romania. The taxation in the health field remains centralized.

Conclusion:

The positive results of the decentralization of the hospitals from the pilot phase in Romania, the phase in which the hospitals from Oradea were included, led to the transfer of authority and responsibility from national to local level. The analysis carried out in the pilot phase allowed to identify the health needs of the population of Oradea and to adapt the hospital services.

The decentralization process brought the local administration closer to the people and adapted the provision and quality of hospital medical services to the needs and needs of the community.

The decentralization also increased the capacity of the citizen of Oradea to support / sanction a performing / non-performing local administration.

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AETIOLOGY AND LAPAROSCOPIC INTERVENTION IN ACUTE APPENDICITIS

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Abstract

The obstruction of the appendix lumen has always been considered as the primary pathogenic modification. While obstruction can be observed in 40% of the cases, recent studies have shown that mucosal ulceration is the inciting event in most cases of acute appendicitis. The causes of the ulceration are unknown, it seems that a viral aetiology might also be involved. It has been suggested that infection with Yersinia could lead to the disease as increased complement levels were found in over 30% of the proven cases one week after the surgery. In case of obstruction, acute appendicitis is usually caused by a small fecaloma which results from the faeces that became impacted and that accumulated around the plant fibres. Adenopathies associated with viral infections, intestinal worms and tumours can also cause the obturation of the lumen.

Key words: lumen, obturation, adenopathies, inductor

INTRODUCTION

Appendicitis occurs more frequently in the second and third decades of life. The condition can be encountered at any period of life, but it is relatively rare at extreme ages. Men and women are equally affected, except for the period between puberty and 25 years when men are more affected. Perforation is relatively more frequent in young children and in the elderly when mortality is also the highest (Romano et al., 2009).

The pain syndrome in the right iliac fossa refers to those situations where, using the full range of clinical and paraclinical examinations, it is not possible to establish with certainty which organ in the sub-umbilical level of the right hemiabdomen causes the clinical suffering.

Laparoscopic appendectomy is performed more and more successfully, but the exact impact of this treatment compared to open surgery, especially in case of rupture, has not been clarified, except for the cases when there are doubts about the diagnosis (Davico et al., 2004). Thus, the treatment of these clinical cases consists

of performing a small-sized laparotomy in the right iliac fossa, but that does not allow a proper exploration of the surrounding viscera. An inflammatory appendix requires an appendectomy, the case being considered practically solved. Problems arise when macroscopically the appendix is normal and when larger incision is needed for a better intraoperative exploration. Patients are left with a larger incision and with a higher risk for subsequent wound complications, but, from the point of view of the affected organ, patients are treated. The most unpleasant situation is considered that of those patients who undergo appendectomy as surgeons consider that the clinical suffering is caused by an incipient inflammatory disease of the appendix when in fact this suffering is caused by another neighbouring organ, most commonly the reproductive organs in the case of female patients. Postoperatively, the evolution is unfavourable and sometimes even tragic. Difficulties of preoperative diagnosis occur especially in female patients due to the anatomical proximity of the appendix to the internal reproductive organs, similar clinical signs and similar frequency of their impairment during the active reproductive period (David et al., 2019). This explains the considerably higher rate of female patients with this diagnosis. Although much rarer, this diagnosis may appear in male patients, old age or the atypical clinical context raising the suspicion of non-appendicular suffering.

MATERIAL AND METHOD

In order to obtain the proposed objectives, the authors did a retrospective study.

The study period extended over 5 years (01.01.2014-31.12.2019).

The material basis of the study included the patients' observation sheets from the hospital archive, respectively the computerized data of the two units.

RESULTS AND DISCUSSION

Table 1
Distribution of cases according to aetiology

Aetiology	Female		Male		Total	
	No.	%	No.	%	No.	%
Bacterial infection	80	53.7	70	58.3	150	5.8
Viral infection	24	12.1	16	13.3	34	14.9
Undigested plant residues	15	10.1	12	10.0	27	10.0
Parasites	12	8.1	6	5.0	18	6.7
Foreign bodies	18	19.7	16	13.3	40	12.6
Total	**149**	**100.0**	**120**	**100.0**	**269**	**100.0**

The data obtained were interpreted statistically based on the determination and calculation of several series of indices: the ratio of OR quotas (with a 95% confidence interval), the chi-squared test, the Fisher's

exact test (to determine the statistical significance), the absolute and relative frequency.

Most cases of acute appendicitis were predominately of bacterial aetiology (55.8%), followed by the viral one (14.9%), regardless of the severity of acute appendicitis ($p = 0.324$).

Acute appendicitis is a disorder that has many causes and obscure pathogenesis. The mucus secretion relaxes the organ, increasing the intraluminal pressure up to 60 cm H_2O. Thus, the bacteria in the lumen multiply and eventually invade the wall of the appendix. Due to the increased intraluminal pressure, the venous return and the arterial circulation are compromised. If the process is slow, the adjacent organs such as the terminal ileum, the cecum and the omentum may act like a barrier around the appendiceal region so that a localized abscess will develop, while the rapid deterioration of the circulation may result in perforation with free abscess in the peritoneal cavity. Subsequent ruptures of the primary appendiceal abscesses may produce fistulae between the appendix and the bladder, the small intestine, the sigmoid or the cecum. Occasionally, acute appendicitis may be the first manifestation of Crohn's disease.

Chronic infection of the appendix can occur in tuberculosis, amoebiasis, actinomycosis. According to a very useful clinical axiom, the chronic inflammation of the appendix is not normally a cause of prolonged abdominal pain that lasts for several weeks or months. However, it is clear that recurrent seizures of acute appendicitis occur often with complete resolution of inflammation and symptomatology between seizures. Recurrent acute appendicitis may become more common due to uncontrolled use of antibiotics and due to the long appendiceal stump that has become more and more frequent following the use of laparoscopic appendectomy (Kelly et al., 2015).

An open approach and an appendectomy in a patient presenting the clinical signs of the painful syndrome, even when an ultrasound examination shows normal internal reproductive organs, can often lead to an mini incision appendectomy without exploring the reproductive organs. Thus, in the case of unnecessary appendectomies, the risk of post-appendectomy complications is not to be neglected. Certain situations when the postoperative evolution of a sub-diagnosed non-appendicular disorder require reintervention in female patients who may be in different stages of hemorrhagic or septic shock.

It can therefore be stated that laparoscopy allows accurate and fast differential diagnosis. However, all clinical examinations, usual biological tests and ultrasound (from the paraclinical examinations) must be run before considering the laparoscopic intervention. If the patient does not present an acute surgical abdomen, other imaging, radiological and endoscopic examinations are to be considered as well as histological or bacteriological examinations if the case. Non-surgical diagnoses - ureteral colic, salpingitis, enterocolitis, uncomplicated diverticulitis, normal pregnancy should be excluded before considering the laparoscopic intervention.

Exploratory laparoscopy has relative contraindications in patients with adhesive syndrome, occlusive syndrome or bulky abdominal tumours, generalized peritonitis (small chances for the intervention to be performed laparoscopically).

Obviously, in patients with severe cardiorespiratory symptoms, classical exploration under regional or even local anaesthesia is to be preferred in order to avoid the side effects of the pneumoperitoneum.

Prior to surgery, besides a proper rebalancing, patients must be informed on their condition, possible evolution, anticipated technical possibilities and associated risks. All patients should be warned about a possible conversion to classical surgery if the case.

Therefore, there is a wide variety of conditions that present pain in the right iliac fossa and where laparoscopy represents the current method of investigation despite its invasive nature. Experience has led to a reduced percentage of mortality (0.1%) and morbidity (3.4%), the diagnostic sensitivity being far superior to the imaging explorations (ultrasound, computed tomography, magnetic resonance imaging). The method allows direct visualization of the lesions, highlights lesions with F = 2-3 mm (compared to 1-2 cm in the case of CT, MRI), collects (targeted and in the requested quantity) samples of biological material (for bacteriological, cytological, histopathological examination) and, last but not least, it allows the control of associated incidents/accidents (bleeding, perforation of the organs in the cavity).

Eventually, gangrene and organ perforation occurs. Statistical analysis of the data shows that most cases of acute appendicitis are predominately of bacterial aetiology (55.8%), followed by the viral one (14.9%) regardless of the severity of acute appendicitis (David et al., 2019).

The retrospective study "The Importance of Fecaliths in the Aetiology of Acute Appendicitis", conducted by Engin et al., specifies that intraluminal pathology is likely to play a major role in the development of acute appendicitis. Intraluminal pathological findings may also be observed in healthy persons and this condition does not point to acute appendicitis. The disease progresses from intraluminal fecalith, with no inflammation, to perforation from the beginning. There are several explanations on the formation of fecaliths. Abdominal ultrasound, computed tomography and magnetic resonance imaging techniques can decide the diagnosis of fecalith.

According to the study "The Role of Laparoscopy in the Pain Syndrome in the Right Iliac Fossa" the pain syndrome in the right iliac fossa refers to those situations where, even when using the full range of clinical and paraclinical examinations, it is not possible to establish with certainty which organ in the sub-umbilical level of the right hemiabdomen causes the clinical suffering. Difficulties of preoperative diagnosis occur especially in female patients due to the anatomical proximity of the appendix to the internal reproductive organs, similar clinical signs and similar frequency of their impairment during the active reproductive period. This explains the considerably higher rate of female patients with this diagnosis. Although much rarer, this diagnosis may appear in male patients, old age or the atypical clinical context raising the suspicion of non-appendicular suffering.

Laparoscopy allows accurate diagnosis and the minimally invasive and targeted treatment of the lesions (Davico et al., 2004).

CONCLUSIONS

From an aetiological point of view, the presence of fecaloma, lymphoid hyperplasia, parasites, undigested plant residues, foreign bodies represents the cause of acute appendicitis.

Laparoscopy has a double role, diagnostic and therapeutic. Thus, it allows the complete diagnosis and, consequently, the resolution during the same surgery of all the surgical causes that are at the origin of the painful syndrome.

Laparoscopy allows surgical intervention targeted on the diseased organ, reduces the number of unnecessary appendectomies and, essentially, avoids "white" exploratory laparotomies with high risks of morbidity. The indication of laparoscopic approach is elective based on the suspicion of non-appendiceal (surgical) pathology. Besides female patients in the active reproductive period, patients over the age of 45 years and those with disorders of the immune system also benefit of laparoscopic explorations. Laparoscopy is indicated in these categories of patients when further examinations do not identify the affected organ or when further investigations cannot be performed. Even if the laparoscopic intervention will not be performed, the method facilitates the choice when laparotomy is considered the appropriate approach for maximum surgical comfort.

Laparoscopy is also indicated in obese patients when the exploration by classic incision becomes a laborious operation with increased postoperative morbidity. Compared to classical surgery, laparoscopic interventions have many advantages: complete diagnostic and therapeutic role, minimally invasive approach (reduced visceral and parietal trauma, reduced postoperative pain, fewer complications, reduced hospitalization, rapid socio-professional reintegration, low costs, aesthetic benefits). Of course, when laparoscopy is considered, one must take into account the known absolute or relative contraindications of the laparoscopic approach.

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ANATOMICAL AND CLINICAL CORRELATIONS IN SKIN TRAUMATOLOGY

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Abstract

The skin is the organ that covers the entire surface of the body and is the main "place" of interaction with the external environment, offering protection against traumas caused by ultraviolet radiation, extreme temperatures, bacteria, viruses, fungi, toxic etc. Primary traumatic lesions represent the morphological substrate of local post-traumatic changes in forensic medicine and clinically objectify a trauma. The clinical presence of the traumatic lesions has both clinical, therapeutic and prognostic importance, as well as a medico-legal importance to establish the mechanism by which the trauma occurred. , and lesions with a continuity solution in excoriations and wounds. Wound healing is the process by which the skin is repaired after a trauma. In non-damaged skin, the epidermis and dermis, form a protective barrier against the external environment. When this barrier is damaged, a biochemical cascade of processes goes into action to repair the lesion. The major importance of these traumatic lesions is represented by their description, which will include the topographic location, shape, evolutionary stage, size and specific characteristics.

Keywords*: skin anatomy, primary traumatic lesions, topographic location.*

INTRODUCTION

The skin is the organ that covers the entire surface of the body and is the main "place" of interaction with the external environment, offering protection against traumas caused by ultraviolet radiation, extreme temperatures, bacteria, viruses, fungi, toxic etc. (Freinkel, 2001)

The anatomical structure consists of three layers: epidermis (ectodermic origin) and dermis (mesodermal origin). Under the dermis, there is the hypodermis or subcutaneous tissue that represents a structure that is not part of the skin. (Mekeres, 2017).

The subcutaneous tissue is made up of lax connective tissue, rich in adipose cells that form the hypodermic adipose panicle, having as macroscopic correspondent the superficial fascia because it ensures the lax adhesion of the skin to the underlying anatomical layers. (Junqueira, 2008)

Typically, two types of tegument are described: the thick tegument represented by the glabrous, smooth or non-oily skin and the thin, hairy tegument, which covers most of the body. The thickness of the epidermis makes the difference between these two types of tegument, the thick tegument having

between 400 and 600 μm, and the thin one between 75 and 150 μm. (Krishnaswamy, 2004) (Kanitakis, 2002)

Primary traumatic lesions represent the morphological substrate of local post-traumatic changes in forensic medicine and clinically objectify a trauma.

The clinical presence of the traumatic lesions has both clinical, therapeutic and prognostic importance, as well as a medico-legal importance to establish the mechanism by which the trauma occurred. , and lesions with a continuity solution in excoriations and wounds. (Dermengiu, 2015)

MATERIAL AND METHOD

We evaluated the clinical manifestations imminent to the action of the traumatic agents in the production of primary, complex and specific skin traumatic lesions in order to highlight their importance both in the clinic from a therapeutic and prognostic point of view, but especially in the current forensic practice.

The skin has variations in thickness, depending on location, gender and age. The difference in thickness is given by the thickness of the dermis because the epidermis is usually constant throughout life and anatomical location. The location where the tegument has the greatest thickness is in the palm and in the plant, where it is about 1.5 mm, and at the level of the eyelids, the tegument has a thickness of 0.05 mm.

Skin changes associated with age include: thinning, laxity, fragility and wrinkles. Areas exposed to the sun, in addition to age changes, depigmentation, premature wrinkles, telangiectasis and actinic elastosis. Skin aging is characterized by intrinsic and extrinsic changes. (Anatolie, 2016)

Wound healing is the process by which the skin is repaired after a trauma. In non-damaged skin, the epidermis and dermis, form a protective barrier against the external environment. When this barrier is damaged, a biochemical cascade of processes goes into action to repair the lesion. This process is divided into the following phases: abscess formation (hemostasis), inflammation, tissue growth (proliferation), tissue remodeling (maturation). (Stadelmann, 1998)

The major importance of these traumatic lesions is represented by their description, which will include the topographic location, shape, evolutionary stage, size and specific characteristics.

RESULTS AND DISCUSSION

Primary traumatic lesions represent the morphological substrate of local traumatic changes that objectify a trauma. In order to have clinical and forensic value, they need to be accurately described as soon as possible by physicians who first come into contact with them because after therapeutic interventions, skin lesions may change their characteristics.

A contagious wound that has irregular edges and has tissue bridges, if treated surgically, by surgical sectioning of the edges to debride necrotic tissue and for a superior aesthetic result, the edges will be smooth and may be confused with

the cut wound that from the point medico-legal view is produced by another traumatic agent.

In order to avoid confusion and for a correct and complete lesion balance of the traumatic lesions, the description of the traumatic lesions is done according to the topographic criterion, both by the clinicians and the forensic doctors as follows: location, name of the lesion, shape, evolutionary stage , dimensions, specific characters.

Scars are part of the normal healing process. The scars are initially red or pink and slightly elevated, palpable or less depressed, atrophic or contractile. In a normal situation, over time they become discolored and flattened. (Putra, 2017)

Important factors that contribute to unsightly scarring are: tension in the suture, infections, delayed epithelialization, uneven alignment of wound edges, insufficient blood flow to healing scars, genetic factors, which cannot be controlled.

The scars represent the healing of the body after traumatic injuries and can be helpful in establishing the traumatic agent and on the mechanism of action over a long time since the trauma occurred. (Mekeres, 2017)

CONCLUSIONS

The elemental traumatic lesions of the skin represent the post-traumatic changes of the skin produced by a traumatic agent. These are primary traumatic lesions, complex and specific traumatic injuries such as burns, frostbite, electric mark and chemical burns.

The correct description of the traumatic injuries is essential to prove the reality of the trauma, its mechanism of production, the length of the injury and sometimes the nature of the traumatic agent, elements of major importance in forensic medicine.

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CASE REPORT
Cytomegalovirus reinfection in a patient with chronic hepatitis C

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Abstract

Cytomegalovirus(CMV) infection remains latent throughout life, recurrent in evolution. Recurrent infection includes both reinfection and reactivation and manifest as CMV disease which frequently develops in immunocompromised patients. We describe a case of chronic active hepatitis C, activation produced by reinfection with CMV in a patient with low immunity secondary to splenectomy, chronic VHC infection. CMV infection is sustained by purple lesions, oral aphthae and ulcerations, mononucleosis syndrome, lymphocytes with nuclear inclusions, inflammatory syndrome, hepatitis, nephritis, inflammatory lymphadenopathy, reactive IgG CMV. Recent CMV infection is sustained by 5- fold increase in IgG CMV titers.

Keywords: Cytomegalovirus, chronic hepatitis C, mononucleosis syndrome.

INTORODUCTION

CMV usually causes an asymptomatic infection or produces mild flulike symptoms; it remains latent throughout life and may reactivate.(12,17).

Reactivation of previously latent infection or newly acquired infection manifest as a CMV disease. Clinically significant CMV disease frequently develops in patients immunocompromised by HIV infection, solid-organ transplantation, or bone marrow transplantation, as well as in those receiving high-dose steroids, tumor necrosis antagonists, or other immunosuppressing medications (7, 20).

Symptomatic CMV disease in immunocompromised individuals can affect almost every organ of the body, resulting in cutaneous vasculitis, fever of unknown origin, pneumonia, hepatitis, encephalitis, myelitis, colitis, uveitis, retinitis, and neuropathy(5). CMV may infect the GI tract from the oral cavity through the colon. The typical manifestation of the disease is ulcerative lesions. In immunocompromised individuals, laboratory

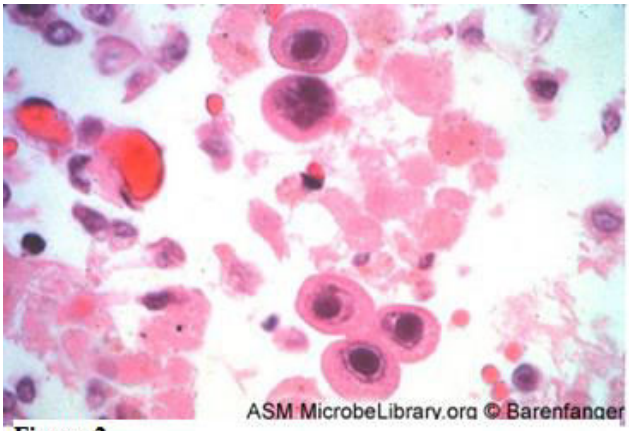

Figure 2.
H&E stain of CMV-infected cell in lungs of AIDS pacient. Nuclear inclusions can be seen

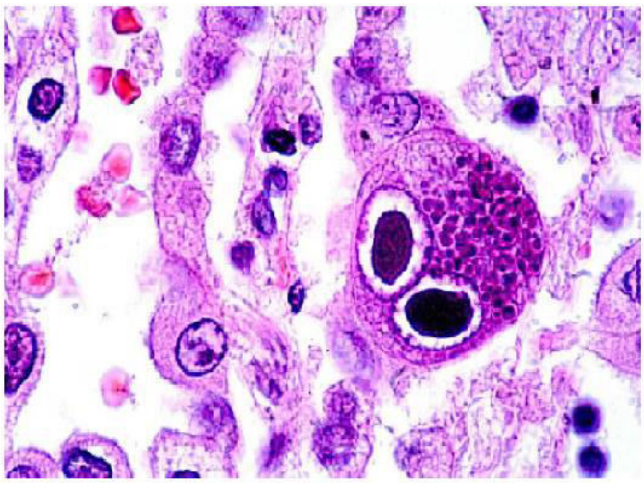

Figure 1.
Hematoxylin-eosin–stained lung section showing typical owl-eye inclusions (480X). Courte
of Danny L Wiedbrauk, PhD, Scientific Director, Virology & Molecular Biology, Warde
Medical Laboratory, Ann Arbor, Michigan.(9)

tests show a mononucleosis syndrome, lymphocytosis plus atypical lymphocytosis(3, 10, 18).

CMV is a lytic virus that causes a cytopathic effect in vitro and in vivo. The pathologic hallmark of CMV infection is an enlarged cell with viral inclusion bodies.

Intracellular inclusions surrounded by a clear halo may be demonstrated with various stains (Giemsa, Wright, hematoxylin-eosin, Papanicolaou). This gives the appearance of an "owl's eye.

Immune response cytomegalovirus involves the synthesis of specific antibodies in the IgM class a few weeks after contracting the infection, followed a week later by the appearance of IgG antibodies. Primary CMV infection is defined as infection in an individual who was previously CMV seronegative. In these patients, CMV immunoglobulin M (IgM) antibodies may be found as early as 4-7 weeks after initial infection and may persist as long as 16-20 weeks. Determination of IgM antibodies is an important tool in the diagnosis of acute cytomegalovirus infection. Naturally acquired immunity to the virus does not seem to prevent reinfection or the duration of viral shedding(2, 8,16).

Reactivation of the virus is not uncommon, sometimes occurring with viremia and a positive IgM result in the presence of IgG antibody. This is usually observed during intercurrent infections or at times of patient

stress. However, it is difficult to distinguish between primary and secondary infection.

Reactivation of the virus - infection with the same CMV strain previously involved- is diagnosed by positive IgM CMV in the presence of IgG antibodies, reinfection - new aquired infection- refers to the detection of a CMV strain different from the one that caused primary infection, elevated IgM CMV levels or 4-fold increase of IgG titers respectively(14,15,19)

MATERIA AND METHODS

A 41 years old man admitted for palpable, purple lesions localized on legs, bilaterally, symmetrically, lower abdomen, accompanied by leg oedema, 2 days onset. History reveals splenectomy(1975), chronic C hepatitis(2009). In general clinical examination we find oral mucosa aphthae, hepatomegaly. Alcohol abuse is denied. Primary dermatological diagnosis is cutaneous vasculitis.

RESULTS AND DISCUSSION

Leucocytosis, lymphocytosis, inflammatory syndrome, hepatocytolysis, elevated GGT, hyperbilirubinemia. Peripheral blood smear: atypical lymphocytes, with nuclear inclusions (mononucleosis syndrome). IgM and IgG for EBV- nonreactive, serum testing for HIV antibody – negative, Anti-Toxoplasma immunoglobulin G (IgG) titres negative, IgG CMV-5 folds the normal levels, IgM CMV nonreactive. Rheumatoid Factor-negative, negative cryoglobulins. Negative pharyngeal exudate, normal levels for ASLO. ANA, ANCA negative.

Abdominal ultrasound examination reveals fibrotic liver for chronic hepatitis, no signs for hepatocelular carcinoma, hepatic hilar lymphadenopathy-inflammatory .

Platelet count is mandatory for differential diagnosis of purple lesions in a splenectomised patient. Normal platelet count excludes thrombocytopenic purpura secondary to splenectomy. Presence of palpable purpura in a patient with chronic C hepatitis offers multiple differential diagnosis, leukocytoclastic vasculitis (LCV) first of all. Hepatitis type C is a commonly recognized cause of LCV, likely through the presence of cryoglobulins. Leukocytoclastic vasculitis is a necrotizing small vessel vasculitis of the skin , kidneys, joints, and eyes. Disorders of this type belong to a group termed mixed cryoglobulinemia syndrome. These disorders display palpable purpura of the legs (which is worse distally and inferiorly), livido reticularis, ulcerations, urticaria, symmetric polyarthritis, myalgias, cutis marmorata, and fatigue(1).

Medication intake: antibiotics - particularly beta-lactam drugs, nonsteroidal anti-inflammatory drugs, diuretics may be implied in etiology of vasculitis, as well as upper respiratory tract infections -particularly with beta-hemolytic streptococci, HIV infection, bacterial endocarditis, enteroviruses.

Rheumatoid Factor negative, negative cryoglobulins – exclude leukocytoclastic vasculitis in active hepatitis type C, negative HIV excludes HIV infection as potential etiological factor for vasculitis, negative pharyngeal exudate asociated to normal levels for ASLO excludes beta-hemolytic streptococcal upper respiratory tract infection, no new medication intake from those involved were detected.

Regarding hepatocitolysis, autoimmune hepatitis might be another possibility. ANA, ANCA negative – exclude autoimmune hepatitis(6). Existence of oral aphthous lesions, no genital ones exclude Behcet Disease.

Co-existence of oral aphthous lesions and ulcerations with palpable purple lesions imposes another possible diagnosis: Cytomegalovirus infection.

This supposition is sustained by clinical signs, as well as lab signs, atypical lymphocytes, with nuclear inclusions. Mononucleosis syndrome may be also caused by Epstein-Barr virus (EBV) infection IgM and IgG for EBV- nonreactive, primary toxoplasmosis (Anti-Toxoplasma immunoglobulin G (IgG) titres negative), or acute HIV seroconversion(11). - testing for HIV antibody – negative. 5- fold increase in IgG CMV titres demonstrates recent CMV infection, a reinfection.

CONCLUSIONS

Final diagnosis is active chronic hepatitis type C, activation produced by reinfection with CMV in a patient with low immunity secondary to splenectomy, chronic VHC infection. CMV infection is sustained by purple lesions, oral aphthae and ulcerations, mononucleosis syndrome, lymphocytes with nuclear inclusions, inflammatory syndrome, hepatitis, inflammatory lymphadenopathy, reactive IgG CMV - . 5- fold increase in IgG CMV titers.

We did find interesting this case for the complexity of diagnosis as well as for underlying that monitoring the dynamics of the level of CMV IgG antibodies is an important means of detecting acute CMV infection besides determination of CMV IgM antibodies, meaning a reinfection and it requires the establishment of specific antiviral therapy.

We consider necessary monitoring CMV IgG in immunosuppressed patients.

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QUALITY OF LIFE IN BREAST CANCER PATIENTS HISTOLOGICAL TYPES, RARE FORMS

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Abstract

Purpose: The present work proposes an approach to breast cancer in the light of the complexity of malignant histological forms, but also of high-risk lesions with potential malignancy.

Keywords: breast cancer, hyperplasia, carcinoma in situ, invasiveness, multidisciplinary, quality of life.

Material and method of work:

Typical and atypical hyperplasia, increased risk injuries, clinical follow-up, imaging and histology are essential in hyperplasia to ensure therapeutic interventions at an optimal time of disease evolution. In situ carcinoma, ductal and lobular, invasive carcinoma with specific forms as well as rare forms of breast cancer, benefit from specific treatment, analyzed in the multidisciplined team surgeon, oncologist, radiotherapist, psychotherapist.

Conclusions: histological forms are varied, follow-up and therapeutic approach takes into account these aspects, the multidisciplinary approach allows for the optimal performance of therapeutic interventions, adaptation to the particularities of the case, allowing Increasing survival and improving the quality of life.

1. High risk injuries:

Hyperplasia is an increase in the number of ductal or lobular epithelial cells, cells that may or may not have atypia and the overall loss of apicobasal orientation. The most frequent is ductal hyperplasia without atypia, if the process is marked, it is called florid hyperplasia or papillomatosis.

Atypical ductal hyperplasia (HAD) must be differentiated from carcinoma in situ. Median hyperplasia is characterized by the presence of 3 or more cell layers near the basement membrane in a lobular or ductal unit. Such lesions are an "inflammatory" form of hyperplasia, with a clear

separation between epithelial and inflammatory cells and are found in over 20% of biopsies. Their clinical significance is that they involve an increased risk of 1.5 to 2 times the occurrence invasive carcinoma[19].

All proliferative changes of breast tissue signify an increased risk for the further development of breast cancer, but this risk is significantly different depending on the type of proliferation; Although most carcinomas after a benign biopsy with proliferative changes occur in those with typical hyperplasia, a relatively higher risk is associated with atypical hyperplasia[20].

The multidisciplinary approach, the clinical follow-up, the imaging and the histology is essential in the hyperplasia, in order to ensure the therapeutic interventions in an optimal moment of the evolution of the disease, which will allow the preservation of the quality of life of the patients and the cure[21].

2. Ductal/lobular carcinoma in situ (CDIS/CLIS)

In situ carcinoma is characterized by the fact that tumor cells remain strictly localized in ducts or lobules, without evidence of invasion of the surrounding stoma by ordinary microscopy; theoretically, such lesions could not occur regionally or remotely, but in practice there are cases of carcinomas in situ documented histologically as such but with the involvement of regional nodules. A notion that complements from this point of view that of in situ carcinoma is that of microinvasive carcinoma, a less well defined entity that cannot be circumvented in practice and which would refer to a lesion with an existing stromal invasion but both so small that the risk of metastasis, although theoretically existing, is negligible in practice.

In situ carcinomas are of two categories: ductal in situ carcinomas and lobular in situ carcinomas; it should be mentioned that the distinction is made on the basis of growth pattern and cytological characteristics, rather than on the basis of anatomical localization.

Ductal and lobular carcinomas in situ differ as clinical presentation, morphology, biological behavior and, therefore, as prognosis.

In situ ductal carcinomas comprise a heterogeneous group of lesions with difficult to predict biological and clinical evolution, so that none of the classifications that have been made are fully relevant in terms of their management and prognosis. A simple classification that best correlates with the potential for recurrence after limited excision divides the ductal carcinomas in situ into high-grade (intermediate), intermediate-grade and

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low-grade (low-grade) carcinomas in the Lagio classification, respectively weakly differentiated, intermediary differentiated and well differentiated, the European classification[22]:

I. high-grade in situ carcinomas exhibit aneuploidy, hyperexpression of the oncogene c-erbB-2, mutations of the p53 gene, high proliferation rate, lack of estrogen and progesterone receptors, angiogenesis in the surrounding stroma;

II. low-grade in situ carcinomas have a low proliferation rate, very rarely show alterations of biological markers, are positive for estrogen and progesterone receptors;

III. the intermediate carcinomas are between these two models both in terms of morphology and frequency of alterations of biological markers.â

In situ lobular carcinomas, in contrast to the ductal ones, have a very homogeneous appearance and a less aggressive biological behavior (less aggressive than the low-grade ductal ones); they are never clinically presented as a palpable mass and do not have special mammographic features, so they represent an accidental microscopic finding; these reasons make lately in situ lobular carcinoma less regarded as neoplasia per se and more as a marker of the developed risk of invasive carcinoma (the risk of invasive carcinoma occurring in patients with in situ lobular carcinoma is 1% per year throughout life, but the invasive neoplasms that appear have no topographic connection or histological resemblance to the in situ carcinoma found)[23]. The mammary puncture is the one that establishes the diagnosis of certainty. Correlation of imaging examinations with histopathological outcome, clinical examination, multidisciplinary approach taking into account the particularities of the case allow, the establishment of therapeutic conduct.

3. Infiltrative carcinomas:

a. ductal or common infiltrative, most commonly, 70-80%; it can be well differentiated, intermediate or poorly differentiated; In varying proportions, in situ ductal carcinoma is associated, which is an important prognostic factor in patients treated with conservative surgery on the breast;

b. lobular invasive, 2nd in frequency, 5-10%, classically with better prognosis than the first; lobular carcinoma is often associated in situ, frequently bilateral and multicentric;

c. - tubular, can represent up to 10% of breast carcinomas and has a much better prognosis than invasive ductal

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carcinoma, although in 75% of cases it is associated with low grade in situ ductal carcinoma;

d. mucinous (colloid), 1-2%, occurs more frequently in elderly patients and has a favorable prognosis;

e. marrow, 5-10%; spinal cancer and colloid cancer have the characteristics of benign tumors, which can lead to diagnostic errors.

f. papillary, metaplastic, adenoid cyst, etc., 1-2%.

A surprising type of cancer is triple negative breast cancer (HER2-, ER-, PR-) which has a high mortality rate and whose cells resemble the basal cells of the skin and sweat glands. These mammary cells create a support structure for the mammary ducts. It was observed that it was different from any other type of breast cancer, more closely resembling to ovarian and lung cancer.

Two other types of breast cancer appear from the luminal cells lining the breast ducts. These types of cancers have on their surface proteins that attract estrogen, thus ensuring their growth. Almost all patients suffering from estrogen cancer receive the same treatment. In some cases it results, in others it does not. Genetic analysis has divided these cancers into two distinct types. Patients suffering from luminal cancer A have made progress, while in patients suffering from luminal cancer B no improvement has been observed. This suggests that patients with the first type of cancer could recover only with hormone therapy, which prevents estrogen from feeding the tumor, while people with the second type of cancer are more likely to would be subjected to chemotherapy[24]. In some cases, genetic abnormalities were so strongly associated with one type of luminal cancer that they seemed to have been the basis of the respective tumor formation. Another type of cancer is called enriched Her2 researchers, some types of breast cancer often have additional copies of a Her2 gene that causes them to grow.

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[24] Bălanescu I., Anghel Rodica- Breast cancer; Surgical Pathology; Under the redaction of Angelescu N., Celsius Publishing House, Bucharest,1997.

the tumor, while people with the second type of cancer are more likely to would be subjected to chemotherapy. In some cases, genetic abnormalities were so strongly associated with one type of luminal cancer that they seemed to have been the basis of the respective tumor formation. Another type of cancer is called enriched Her2 researchers. some types of breast cancer often have additional copies of a Her2 gene that causes them to grow.

4. Rare types

Inflammatory cancer - carcinomatous mastitis (tumor invasion in dermal lymphatics) may be primary (rare) or secondary (inflammatory relapse); It is an aggressive form of carcinoma, intensely angiogenic and angioinvasive; at presentation, almost all patients have lymph node involvement and more than one third have systemic metastases; breast skin biopsy reveals tumor emboli in superficial lymphatics; the vital prognosis is poor. This type of disease, framed between locally advanced breast cancer forms, is not a special histological type, in most cases the tumor being ductal, but the very high capacity of angiogenesis seems to be an intrinsic feature of the tumor. From the point of view of cell kinetics, the growth rate is very high; from the point of view of molecular genetics, there are common alterations with other carcinomas (c-erbB-2 hyperexpression, p53 mutation) and inflammatory carcinoma-specific alterations (RhoC-GTP-axis hyperexpression and LIBC loss, an insulin-like growth factor)[25].

Paget's disease of the nipple (carcinoma in situ with galactophore channels starting point). It is a rare form of breast cancer, about 2-3% of the total mammary carcinomas. It occurs more frequently in women over 40 and the evolution is slow. It is characterized by itching, erythema and then nipple ulceration. Periodically the ulceration is covered with scales, which gives the false impression of healing. It originates in the epithelial cells of the large caliber galactophore channels and is characterized by the presence of Paget cells that are voluminous with pale cytoplasm and chromatin arranged in thick grunts. The histiogenesis of this type of cancer has provoked controversy by setting out two hypotheses. The first hypothesis claims that the disease would be epidermal in nature and that Paget cells would appear as the result of a degenerative process leading to the installation of an epidermal neoplasm, at present this hypothesis is abandoned in favor of a theory that tumorigenesis is located in galactophore channels, the disease spreading -is by invasion in tegument. The arguments are immunohistochemical. It can take 3 clinical forms:

I. lesion limited to the nipple and areola without tumor in the breast;
II. breast tumor without nipple injury;

[25] Simion S., Surgical Pathology, vol. 1, University publishing house "Carol Davila " 2002

III. areola and nipple lesion associated with breast tumor.3

When the lesion is limited only to the nipple the disease is classified in the Tis stage (carcinoma in situ), when the breast tumor is also present then the classification takes into account the characteristics of the tumor. Sometimes a bloody nipple leak may occur. Axillary lymph node invasion is relatively common.

The breast schstring occurs more frequently in older age. It is characterized by a slow progressive evolution and determines the retraction of the perileional teguments, reaching the global retraction of the breast.

Breast cancer associated with pregnancy is a very rare form of cancer. Statistics show the existence of this cancer in very young women 23-25 years. Diagnosis is generally easy to make, 10-year survival is only 33%, and relapses and bilateralization are more common.

Bilateral breast cancer accounts for 7% of all breast cancers. It may be concomitant when bilaterality is found less than 1 year after the diagnosis of the first or successive cancer. If both cancers are in stage I, the prognosis of the disease does not worsen due to bilaterality. If one of the cancers is more advanced than stage I, the prognosis is worse than in unilateral cancer with the same stage.

5. Other rare primary cancers of the breast are:
   a) phyllodes maligna tumor,
   b) lymphomas,
   c) sarcomas.

Malignant lymphomas of the breast may be Hodgkin's, non-Hodgkin's, and a particular form Burkitt's lymphoma, which occurs more frequently in pregnant or lactating women. It is usually bilateral and has a very rapid evolution. In contrast, primitive hodgkinian and non-hodgkin's lymphomas are one-sided and affect older age groups. The evolution is determined in relation to the known prognostic factors for lymphomas.

Phyllodes cystosarcoma is the sarcomatization of a Phyllodes tumor due to delayed treatment, when it was benign, or because of relapses that result from incomplete surgical treatment. Benefits from modified radical mastectomy, and axillary dissection must be performed because axillary metastases are an important prognostic factor[26]. This form of sarcoma can cause axillary lymph node invasion.

The malignant melanoma can be located either at the level of the breast skin or at the level of the areolomamellar complex. Surgery for diagnostic and therapeutic purposes should be tailored to the size and depth of the melanoma, excision including the tegument, subcutaneous tissue,

[26] Bălănescu I., Blidaru AL. , Breast cancer, Angelescu N., Treatise on surgical pathology, vol.1, Medical Ed. (Bucharest), 2001

gland, including the pectoral fascia. Axillary lymphadenectomy is performed according to Clark's[27] level of invasion. The role of chemotherapy, radiotherapy and biological therapy is the same as for other skin locations of melanoma.

The treatment of breast neoplasm is a complex process that is performed following the decision of the oncology committee, depending on the histological type, with the patient's involvement, a customized therapeutic plan is developed, conservative surgery / radical surgery with or without breast reconstruction, neoadjuvant or adjuvant chemotherapy, hormone therapy, molecular therapy, depending on the histological form and the patient's history. The psychological impact is high at each stage from diagnosis to healing or the death of the patient, which requires the creation of a support team for the patient.

Conclusions

A diagnosis like breast cancer is like a harsh sentence for the person receiving it. The decision-making process for a woman opting for a radical procedure is complex and includes both the physical and the psychoemotional and cognitive components.

The histological forms are varied, the follow-up and the therapeutic approach takes into account these aspects, the multidisciplinary approach allows the optimal time to perform the therapeutic interventions, the adaptation to the particularities of the case, which will allow to increase the survival and improve the quality of life.

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LEADING BY EXAMPLE: THE ANIMAL WELFARE IN THE EU. PAST EVOLUTIONS, CURRENT TRENDS. CASE STUDY: ROMANIA

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Abstract

The animal welfare is an important topic at EU level with a number of important legislative provisions and funding allocated to it. "It is a subject already on the European agenda for several decades, a topic that has gained more and more importance as the animals have being declared as "sentient beings" with rights.

For many years in Romania the question was somehow neglected in favour of other important agricultural topics, yet as the time goes by the welfare of livestock is becoming a topic of importance on the public agenda and on the authorities list of priorities.

For that purpose a series of legislative and institutions reforms were adopted as well as we have witnessed the allocation of various financing sources for the beneficiaries. The situation is improving at the national level but the progress is relative depending on the sector.

Key words: animal welfare, EU, Romania, CAP

INTRODUCTION

The animal welfare is a carefully researched subject at the level of the European Union ever since more than 40 years ago, and there is a an implicit topic at the national level of every Member State. This is proven by both the EU legislation, respectively the official documents concerning this aspect, and also trough the interest given to this topic by the researchers.

Some researchers believe that "animal welfare can be defined as providing environmental conditions in which animals can display all their natural behaviours in nature started gaining importance in recent years." (Koknaroglu, H., & Akunal, T. 2013).

Animal welfare is a complex concept that has indicators and associated parameters which can be affected by numerous factors that include both physical and mental health, Due to this fact, it was established on a common agreement of the consumers, researchers, law makers and farmers that there are 4 general principles of animal welfare, each with 2-4 criteria as seen in Table 1: adequate feeding, proper shelter, good health condition, normal behaviour (Kjaernes and Keeling, 2004, Keeling and Veissier, 2005, Hăbeanu, M., Surdu, I. and Lefter, N.A, 2013).

Table 1

Set of criteria and subcriteria used in WelfareQuality® to develop an overall welfare assessment.

Criteria	Subcriteria	Specifications
Good feeding	1. Absence of prolonged hunger.	
	2. Absence of prolonged thirst.	
Good housing	3. Comfort around resting. 4. Thermal comfort. 5. Ease of movement.	Assessed through behaviour (including rising up and lying down movements) but not injuries (included in 5).
Good health	6. Absence of injuries. 7. Absence of disease. 8. Absence of pain induced by management procedures.	Except those produced by a disease or voluntary interventions (eg mutilations) 1. Absence of clinical problems other than injuries 2. Eg mutilations and stunning.
Appropriate behaviour	9. Expression of social behaviours. 10. Expression of other behaviours. (eg exploration) aspects. 11. Good human-animal relationship. 12. Absence of general fear.	Balance between negative (eg aggression) and positive (eg social licking) aspects. Balance between negative (eg stereotypies) and positive No fear of humans. Except fear of humans.
1 For suckling piglets 'mortality' is considered with injuries because death is mostly caused by crushing by the sow. 2 This includes mortality for young animals (except suckling piglets) and during transport. Mortality at other times is not considered because it largely depends on management and culling strategies. 3 'Social behaviours' (9) and 'fear of humans' (11) are very important components of farm animals welfare (Hemsworth & Coleman 1998; Boe & Faerevik 2003). They have been isolated respectively from 'other behaviours' (10) and 'general fear' (12), to avoid masking the effects of these latter elements.		

Source: *R Botreau, I Veissier, A Butterworth, MBM Bracke and LJ Keeling, 2007, p.226*

The European Union (EU) started discussions on animal welfare in the 1980s and adopted a series of Directives to protect farm animals. Both Recommendations and Directives define higher space allowance, more opportunity for social contacts, balanced diet, enriched environment, and limitation of harmful procedures. (Veissier, Isabelle, *et al*, 2008). The European Commission has solicited quantifiable indicators of animal welfare that are to be evaluated by the association of parameters that are measurable and scientifically based, on the basis of which the EU regulations in this area are to be established (Hăbeanu, M., Surdu, I. and Lefter, N.A, 2013).

In accordance to *Special Report of the European Court of Auditors, no. 31 from 2018*, the EU has some of the world's highest regulatory animal welfare standards, which include general requirements on the rearing, transport and slaughter of farm animals and specific requirements for certain species (Special Report, no. 31, 2018, European Court of Auditors).

The combination of legislation and producer subsidies may provide an appropriate policy which improves animal welfare without directly constraining food consumption choice and could help to achieve other policy aims regarding agriculture in the EU (Bennett, R. M. 1997).

Also at the EU level, trough CAP respectively through the financing mechanism of direct payments, are supported the incomes of the farmers which, in exchange, have the obligation to undertake agricultural activities while respecting a series of standards concerning food safety, environment protection, animal welfare and maintaining the farm land in good agricultural and environment conditions (Bâlgăr, A. C., & Drăgoi, A. E. (2015).

MATERIAL AND METHOD

The current research is using a desk research method that involves using already existing data. It includes using research material published in research reports and similar documents. It is a much more cost-effective method in regards of the time needed than primary research, as it makes use of already existing data. As the name says secondary research is based on previously analysed and filtered data (Bhat, 2019).

Thus the paper would review the existing literature and official documents in order to present an adequate image of the animal welfare in Romania from a legislative point of view as well from a scientific and administrative perspective.

RESULTS AND DISCUSSION

Romania in its capacity as an EU Member State has accepted the *acquis communautaire* and therefore it is subject to the Community rules regarding the animal welfare.

One of the most important regulation in place is the *Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes* which lays down minimum standards for the protection of animals bred or kept for farming purposes. This Directive applies to „any animal (including fish, reptiles or amphibians) bred or kept for the production of food, wool, skin or fur or for other farming purposes" and defines those who are obliged to respect its provisions „any natural or legal person or persons responsible for or in charge of animals whether on a permanent or temporary basis" (Council Directive 98/58/EC of 20 July 1998).

It was based upon the *European Convention for the Protection of Animals kept for Farming Purposes (1976*) and they reflect the so-called 'Five Freedoms': Freedom from hunger and thirst; Freedom from discomfort; Freedom from pain, injury and disease; Freedom to express normal behaviour and Freedom from fear and distress.

Moreover this was further enforced when the *Lisbon Treaty* came into force in 2009 and introduced the recognition that animals are sentient

beings. Article 13 of Title II states that "(…) the Union and the Member States shall, since animals are sentient beings, pay full regard to the welfare requirements of animals (…)".

Following its accession Romania had to adapt its institutional structure for the animal welfare. From the legislative point of view the key legislation piece that regulates it is *Law no. 205 from 2004 for the protection of animals* which regulates the life and welfare conditions of the animals with our without owner. Also we have the *Law no. 60 from 2004 concerning the ratification of the European Convention for the Protection of Pet Animals.*

All this general framework is later on supplemented and developed by various Orders that implement them or the EU legislation into practice.

The key institution in Romania in charge with animal welfare is the *National Sanitary Veterinary and Food Safety Authority (ANSVSA)* which operates as a regulator in the field of veterinary and food safety, a specialized body of central public administration, with legal personality, subordinated to the Government and coordinated by the Prime Minister.

As a general body with a large area of activities ANSVSA operates on multiple fronts and it is mostly a regulatory body, by providing all the legislative provisions and implementation rules to the Romanian farmers.

The EU membership gave birth to a series of European controls on the question of animal welfare. Thus as the time of the accession came closer the audits of the European Union institutions tackled the question of animal welfare. Animal welfare missions to Romania were carried out in October 2007, May and September 2009 and their results are described in *Reports DG(SANCO)/7339/2007, DG(SANCO)/8256-2009* and *DG(SANCO)/8269-2009* .

Table 2
Early preliminary conclusions on animal welfare

Report 7339/2007 concerning animal welfare on laying hens and for transport of horses	Report 8256-2009 concerning animal welfare during transport and in particular horses	Report 8269-2009 concerning welfare of laying hens and animal protection during transport	Report 8389-2010 Concerning animal welfare on farms and during transport
measures had been largely ineffective in ensuring that the system of control for animal welfare is satisfactory. First steps had been taken to establish functioning controls, such as the registration	although measures on animal welfare have been taken by the Central Competent Authority in the form of training and instruction provided since the previous mission in 2007, the Competent Authority at the county level failed to enforce the relevant EU legislation	the CCA has taken action to improve the training of officials for welfare on laying hen premises and during transport but implementation at county level was inconsistent.	The CCA has addressed 5 out of 9 recommendations from the 2007 FVO report and 7 out of 13 recommendations from 2009-8269 report. The CCA have therefore made sustained efforts to achieve better compliance on animal welfare issues principally by providing

of laying hen farms; however, serious non-compliances were seen and have not been adequately addressed by the authorities.			training and revising instructions to the county CAs.

Source: *Final Report of a specific audit carried out in Romania from 26 to 30 April 2010 in order to evaluate the implementation of controls on animal welfare on farms and during transport in the context of a general audit - DG(SANCO) 2010-8389*

We therefore can witness a tentative improvement of the animal welfare situation which is also being detailed in the 2012 *Final Report of an audit carried out in Romania from 21 to 29 November 2012 in order to evaluate the implementation of controls for animal welfare on farms and during transport.*

The Report concluded that at that time that in comparison with 2007 and 2010 progresses have been made: "The systems in place to implement controls on animal welfare during transport and on farms are generally satisfactory. Some problems remain relating to risk prioritisation and the organisation of controls, specific lack of resources in this sector, the lack of dissuasive sanctions for: commercial transporters and overstocking in laying hen premises, and a lack of procedures on when to impose sanctions which leads to inconsistent enforcement." (Report, 2012).

Regarding the animal welfare one of the most present topic at national and EU level was the transport of live farm animals from Romania to other non-EU countries. This sort of news made the headline almost every year in various contexts, all stressing the importance of ensuring animal welfare. The question was and remains of outmost importance for the transport of animals by sea as Romania exports an important number of ruminants annually to third countries using livestock vessels. We there have a special Report dedicated to the sea transport of animals generated by an incident caused by a livestock vessel shipped from Romania to Jordan with 13 000 sheep out of which 5 200 died during transport.

"The Commission services carried out a fact-finding mission in Romania from 26 to 30 October 2015 to collect information on the official checks and circumstances regarding the approval of livestock vessels, in particular the livestock vessel carrying sheep from Romania to Jordan that was involved in the reported incident by media and animal welfare non-governmental organisations.

The report concludes that there were adequate procedures for the approval of livestock vessels at the time of the incident. A subsequent update to the Romanian written procedures for the control of vessels prior to

loading increases confidence in the reliability of these checks." (Report, 2015).

Given this and the relative lack of national Reports dedicated to the welfare of animals one of the most important recent source of information is the *2018 Special Report of the European Court of Auditors on Animal welfare in the EU: closing the gap between ambitious goals and practical implementation*.

As regards Romania the findings are still on a negative side: "Over a series of audits in Romania between 2009 and 2011, DG SANTE recommended that the competent authority apply effective, dissuasive and proportionate sanctions for non-compliance with the animal welfare legislation. At the time of our audit, the Romanian authorities had not yet approved the necessary changes in the legislation to apply such sanctions."

Add to this the animal welfare checks on the farms in Romania by the relevant national authorities are still debatable since "in practice the authorities did not check agricultural holdings that fall within the definition of "non-professional farms". These holdings cover many of the animals in the pig sector (45 %) and almost all animals in the sheep and goat sector (99 %)." (Special Report, 2018)

The importance of animal welfare stands out if we take into consideration the fact that in the NRDP 2014-2020 there is an entire measure – Measure 14 dedicated to the animal welfare.

After a rather rocky start when Romania decided not to introduce Measure 14 — Animal Welfare (M14) in the *National Rural Development Programme (Programul Național pentru Dezvoltare Rurală — PNDR)* 2014-2020 as the official answer said "The analysis of the situation and identification of needs (SWOT) of the draft NRDP did not identify specific needs for supporting animal welfare beyond levels imposed by EU standards. In this context Romania did not have to justify the non-inclusion of this measure. It was a matter of national policy choice, taking into account the extremely important socioeconomic needs of the Romanian rural areas and the limited funding available under the RDP." (Buda, 2015).

Finally funds were allocated and the Measure 14 has started to be accessed by the intended beneficiaries. The latest indicators concerning the number of beneficiaries supported for animal welfare were the following: Target 2023: 549,00; Milestone Stage: 384,30 (70%) and **Achieved (2018): 508 (92,53%)** (Gramillano, 2019).

CONCLUSIONS

The above mentioned data show that the animal welfare situation in Romania is on a slowly improving path. The best situation is in the field of

legislative harmonization as the Romanian authorities have improved the legislative concordance with the EU *acquis communautaire*. As for the financial resources allocated the absorption rate seems to be a satisfactory one.

Yet problems remain as, the above mentioned studies have shown that an important number of agricultural exploitations remain outside the control area of the authorities on animal welfare. An in-depth check could provide some different conclusions that the one in present.

Also, from the point of view of public opinion and civil society, the transport of livestock by sea continues to be a sensitive subject, with constant tragedies that create a powerful public emotion.

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CONTRIBUTIONS FOR FEED CAPITALIZATION STUDY AT BOMBYX MORI BREED

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Abstract

In order to assess how efficient is the use of Mulberry leaf by the Bombyx mori larvae, some determinations were made regarding the nutritional value and digestibility of the worm leaf administered as food, during a series of summer growth. The results showed that ongoing vegetation and growth process of this hybrid, the Mulberry leaves suffer an aging phenomenon, revealed by diminishing its chemical composition quality. According to this, most of the nutritional substances from Mulberry leaves, except cellulose, manifest a continuous decline during the growth period. The digestibility of these nutritional components registered a value of 56.08%, the raw energy value was 4213 kcal/kg dry substance, the digestive energy was 2308 kcal/kg (DS), while the metabolic energy was 2134 kcal/kg (DS). The efficiency of converting ingestion into silk had a value of 9.40% and the digestion was 16.19%.

Key words: leaves, Mulberry, larvae, energy, use.

INTRODUCTION

Besides the continuous improvement of the growth technologies, one of the main concerns of the specialists in sericulture is represented by the production of biological material of high genetic value as the Bombyx mori larvae with an increasing productive potential, more resistant to the environmental factors and to diseases and to use nutrients offered by the Mulberry to the best of their advantage.

Thus, from this point of view, the performances of the used larvae in intensive breeding systems have greatly increased, but at the same time, in order for them to be able to reach their full potential, it is necessary to improve all the factors involved in the breeding process. From the multitude of factors that directly influence the growth process of the larvae and the economic results obtained, it is encountered also nutrition.

The quantity and especially the quality of the worm leaf used in feeding of larvae, directly influence the growth rate, their health and vitality, but also the quantitative and qualitative production of silk. In turn, the quality of the leaf is also influenced by many factors related to the pedoclimatic conditions, season, variety of the mulberry, the way of harvesting and storage etc.

In the specific literature, depending on different factors, the relative humidity values of the Mulberry leaf vary between 65-75% *(Doliş M., 2008)*.

Compared with the common Mulberry (69.80-73%), the selected varieties have more water content *(Bura M. et al., 1995)*. The dried substance from the worm leaf, harvested in the same period, can record, depending on the variety/hybrid, different values, for example, between 23.61% and 27.56% *(Matei A., 1995)*.

Also, if the spring moisture of the mulberry leaf is 71.85-77.81%, then it decreases to 68.42-75.64%, in the summer period, respectively to 64.10-73.64%, in the fall *(Ifrim S., 1998)*.

Digestibility of the dry substance from the worm leaf decreases from 71.07% in age I, to 39.99% (for male larvae), 48.26% (for female larvae) in age V *(Rath S.S. et al., 2003)*. The worm leaf administered to the larvae of the fifth age has an approximate digestibility between 27.99% and 32.44% *(Rahmathulla V.K. et al., 2002)*.

The raw leaf protein is estimated to have an average value of 6.16% in the fresh leaf, 20.97% in the dry substance and 24.36% in its organic substance *(Doliş M., 2008)*. The raw leaf protein values can vary depending on the season, the time of day, the variety/hybrid of the dude: 32.40% in spring, 28.21% in summer and 24.53% in autumn *(Borcescu A., 1966)*, 26.80% in the morning and 29, 10% in the evening *(Mărghitaş L. A., 1995)*, between 22.55% and 25.73% depending on the variety *(Matei A., 1995)*. In the specialty literature, for raw leaf protein, the value of digestibility coefficients is between 69.21% and 78.92 *(Borcescu A., 1966)*, 60.06% and 74.69% *(Petkov N.,1980)*, 71.62% and 93.48% *(Matei A., 1995)*.

The limits presented by specific literature regarding the fat content in mulberry leaves are 2.85- 6.07% *(Pop E.C., 1967)* The values of the digestibility coefficient for raw fat are between 63.28% and 74.19% *(Petkov N.,1980)*.

According to the data from the specialized literature, in the common Mulberry the weight of the raw cellulose ranges between 12.33-14,38%, while in the different varieties selected oscillates between 10.43-13,70% *(Craiciu E., 1966)*. In the vegetation period of the mulberry the content in raw cellulose from the leaves increases from 14.47% to 21.16% *(Pop E.C., 1967)*. Increased cellulose content causes aging of the worm leaf, which becomes harder and harsher, therefore harder to consume by, which is why those varieties whose leaves have less cellulose content are considered more valuable. At the beginning of the last century, some authors *(Acqua, 1930 – cited by Dolis M., 2008)* found that the leaf cellulose passes undigested through the digestive tract of the larvae and later it was concluded that this substance has a digestibility of approx. 20% *(Legay, 1955 - cited by Dolis*

M., 2008). Recently, some authors state that in the first two ages, raw cellulose would not be digested, but only from the third (8%), its digestibility reaches 21.13% in the third period *(Matei A., 1995).*

The values regarding the mineral substances, offered by the specialized literature, ranges between: 9.13- 17.38% *(Pop E.C., 1967)*, 11.52-12.80% *(Matei A., 1995)* and 8, 7.13.15% *(Bura M. et al., 1995).*

At the end of the last century, Romania could be considered an important point on the map of European sericulture. Thus, in her record, Romania can boast in this field with a quite complex literature, as well as with the creation of new varieties and valuable hybrids of worm, as *Bombyx mori*, all being the result of some decade research work of Romanian specialists *(Dolis M., 2008; Lazăr S. and Vornicu O.C., 2013; Pătruică S., 2013).*

For this reason, we consider appropriate to bring a modest contribution to the study of using the mulberry leaf, derived from indigenous varieties, by larvae of breeds or hybrids created in Romania.

MATERIAL AND METHOD

The biological material used in the experiments was represented by a batch of 150 larvae of Bombyx mori from Romanian hybrid Baneasa Super, obtained by a simple cross between the female breed of Japanese type and the male type of Chinese. To be easier to follow, the group was devided into three sub-lots (repetitions) of 50 larvae each, which were raised in paper trays sized according to the age and size of the larvae; in addition, it was also made up a separate lot, with 50 larvae reared separately, but under the same conditions, which served to replace the dead larvae from the experimental group.

The growth of the larvae was in August, in an air-conditioned room, in compliance with all the microclimate factors. Each divided group received the same amount of leaf, from the same variety of worm, Eforie, from where samples were previously collected, for chemical analysis.

The Romanian variety of mulberry Eforie, which is characterised by a high production capacity, a early budding and a high resistance to freezing and drought. It was selected from a local population from Dobrogea in 1955 and introduced into production in 1970.

Daily and at the same time, from each group were collected, weighed and recorded what was not consumed from the Mulberry leaves and what was excreted by the larvae.

The quantities of residues, respectively of excrements, obtained from each group were summed, the result being divided into three, thus obtaining the average quantity of residues from each 50 larvae. The values obtained

were subsequently used in the calculation relationships to find the digestibility coefficients. Also, from each group were collected samples of excrements, which were mixed in order to obtain medium samples for analyze.

Also, the groups were weighed at the beginning of growth (after hatching) and at the end (before budding), the difference between the two weights, divided by the number of larvae in each group, representing the increase in body mass accumulated by a larva.

From the separated lot were extracted 10 larvae, whose content was determined in dry matter; thus, multiplying the average dry substance content of larvae, calculated from the separated lots, with the increasing body mass of the larvae in the experimental lots, it was determined the average increasing of body mass of a larva.

After gobbling, 15 cocoons were harvested, from which the silk wrapper was separated, weighed and its dry matter content determined, thus obtaining the average dry wool content of the silk wrapper.

The working methods used were mainly the specific ones used to determine the nutritional value of the worm leaf and they were based on the chemical composition (the "proximate analysis" scheme), the digestibility of its components (the "in vivo" method - simple digestibility, with a single control period) and raw energy (use of specific computation equations and regression coefficients recommended by the OKIT system), digestible (calculation equation recommended for monogastric species) and metabolizable (equations recommended for monogastric animals and birds) contained *(Halga P. et al., 2005).*

The efficiency of the use of nutrients in the worm leaf by the larvae was expressed by the amount of ingested/digested dry matter required for increasing 1 gram of body mass/weight (silk wrap), respectively by the efficiency of conversion of ingested substances (ECI%)/ digested (ECD%) in body mass/weight *(Matei A., 1995; Rahmathulla V.K. et al., 2002; Sarkar A., 1993).*

RESULTS AND DISCUSSION

Table 1 shows the data of the chemical composition evolution of larvae in relation to their age.

The average values obtained for each nutrient separately are set in the limits presented by specific literature, where the data regarding the crude chemical composition of the mulberry leaves varies according to each author, to the research period, to the varieties of mulberry, etc. The average relative humidity of the mulberry leaves during the research was 70.44%, and an decreasing evolution being registered average values between

71.86% (at the first determination corresponding to the first age of the silkworm larvae) and 68.15% (to the last determination when the silkworm larvae are in the age V-th). The dry matter represented 29.56 ± 0.725%.

Table 1
The chemical composition evolution of the Eforie variety mulberry tree leaves during the silkworm larvae growth (%)

Determination	**Water**	**DM**	**CP**		**EE**		**CF**		**NFE**		**Ash**	
			F*	DM**	F*	DM**	F*	DM**	F*	DM**	F*	DM**
I	71.86	28.14	6.23	22.14	0.85	3.02	4.79	17.02	12.43	44.17	3.84	13.65
II	71.98	28.02	6.21	22.16	0.88	3.14	4.76	16.99	12.24	43.68	3.93	14.03
III	70.68	29.32	6.41	21.86	1.17	3.99	5.26	17.94	12.30	41.95	4.18	14.26
IV	69.53	30.47	6.00	19.69	1.22	4.00	5.58	18.31	13.37	43.89	4.30	14.11
V	68.15	31.85	6.06	19.03	1.38	4.33	6.15	19.31	13.58	42.64	4.68	14.69
$\bar{x}$	70.44	29.56	6.18	20.98	1.10	3.70	5.31	17.88	12.78	43.29	4.19	14.15
$S_{\bar{x}}$	-	0.725	-	0.670	-	0.260	-	0.434	-	0.418	-	0.169
Cv%	-	5.486	-	7.143	-	15.700	-	5.412	-	2.163	-	2.667

* fresh leaves; ** dry matter

The crude protein had an average value of 6.18% (20.98± 0.670% from DM). It is noticed a progressive decreasing of the protein content throughout the studied period, the content decreasing being with 3.11 percentage points, from 22.14% to 19.03%, respectively.

The fat content from the mulberry leaves was in average 1.10% in the fresh leaves, and 3.70% ±0.260 in DM. It is the only nutrient with a high variability, of 15.700%. The fat content increased uniformly throughout the silkworm larval growth, from 0.85% to 1.38% when it was expressed in fresh leaves, or 3.2 % to 4.33% respectively, when it was reported to the dry matter.

The crude cellulose was in average 5.31% in fresh leaves, 17.91±0.434%, respectively when in was reported to DM. Throughout the research, for a month, the crude cellulose increased with 2.29 percentage points, from 17.02% to 19.31%, respectively.

Nitrogen free extract represented in average 43.27 ± 0.418% from the dry matter of the mulberry leaves; the average values decreased from the first determination to the third, from 44.17% to 41.95%, then was an increasing to the fourth determination, being 43.89%, decreasing to the last analyses to 42.64%.

The ash represented in average 4.19% in the fresh leaves and 14.15 ± 0.169% from dry matter. The minerals from the mulberry leaves throughout the research registered a continuous increase from analyse to another. The average values varied from 3.84% to 4.68% to fresh leaves and from 13.65% to 14.69% from dry matter. An exception was registered to the third determination which had a higher value than the fourth one. The increasing in mineral content from mulberry leaves throughout the research was 1.04%.

Knowing the raw chemical composition of the mulberry leaf, using the specific calculation equations, it was possible to assess the nutritional value of the mulberry leaf based on its content of raw energy, which was, on average, over the entire studied period, of 1245 Kcal/kg, in fresh leaf, respectively 4213 Kcal/kg, in the dry matter (table 2).

Table 2

Raw average energy of Mulberry leaf

Specification	**%**		**Caloric equivalent**	**Kcal/100g**		**Kcal/100g**	
	*	**		*	**	*	**
CP	6.18	20.98	5.72	35.35	120.01	353.5	1200.1
EE	1.10	3.70	9.50	10.45	35.15	104.5	351.5
CF	5.31	17.88	4.79	25.43	85.65	254.3	856.5
NEF	12.78	43.29	4.17	53.29	180.52	532.9	1805.2
						1245	**4213**

By recording the quantities of the worm leaf administered, the non-consumed and excreted residues and also determining their chemical composition (table 3), its digestibility coefficients could subsequently be calculated (table 4) and also the content of digestible substances in the leaf (table 5).

Following the complex phenomenon of digestion, nutrients are transformed into simple substances, which can thus be absorbed through the epithelium of the digestive tract, at different levels, thus being retained in the organism of silk larvae, representing practically the difference between the amount of substances ingested through food and the amount of appropriate substances found in droppings. Because not all the substances found in excrement are of dietary origin, some of them are of endogenous origin, which can be obtained by this difference, indicating only apparent digestibility. If you admit the fact that at Bombyx mori excretions are also found in their excrement, which complicates the establishment of the digestibility of nutrients in the wormwood even more accurately, the use of the approximate digestibility term seems to be more correct *(Miranda J.E.and Takahashi R., 1998; Rahmathulla V.K. et al., 2004; Rath S.S. et al., 2003; Sabhat A. et al., 2011; Tzenov P., 1993).*

Table 3

Data needed to calculate digestibility coefficients

The larvae age	Specifi-cation	Quantity (g)	Chemical composition (%/g)					
			DM	CP	EE	CF	NEF	Ash
I	Leaves	15.5	28.140	6.230	0.850	4.790	12.430	3.840
			4.362	0.966	0.132	0.743	1.927	0.595
	Leftovers	5.11	62.580	13.910	2.010	14.020	24.480	8.160
			3.198	0.711	0.103	0.716	1.251	0.417
	Excreta	0.17	78.250	14.010	14.680	15.110	26.120	8.330
			0.133	0.024	0.025	0.026	0.044	0.014
II	Leaves	26	28.020	6.210	0.880	4.760	12.240	3.930
			7.285	1.615	0.229	1.238	3.182	1.022
	Leftovers	8.01	58.850	14.330	2.160	13.890	22.060	6.410
			4.714	1.148	0.173	1.113	1.767	0.513
	Excreta	0.88	74.680	12.570	3.970	14.010	29.010	15.120
			0.657	0.111	0.035	0.123	0.255	0.133
III	Leaves	77	29.320	6.410	1.170	5.260	12.300	4.180
			22.576	4.936	0.901	4.050	9.471	3.219
	Leftovers	22.65	61.540	12.340	2.620	15.860	25.660	5.060
			13.939	2.795	0.593	3.592	5.812	1.146
	Excreta	4.07	64.060	15.920	2.080	9.910	24.120	12.030
			2.607	0.648	0.085	0.403	0.982	0.490
IV	Leaves	242	30.470	6.000	1.220	5.580	13.370	4.300
			73.737	14.520	2.952	13.504	32.355	10.406
	Leftovers	65.94	56.490	12.050	2.020	15.930	25.670	0.820
			37.250	7.946	1.332	10.504	16.927	0.541
	Excreta	19.99	64.440	11.980	2.180	12.010	26.210	12.060
			12.882	2.395	0.436	2.401	5.239	2.411
V	Leaves	1000	31.850	6.060	1.380	6.150	13.580	4.680
			318.500	60.600	13.800	61.500	135.800	46.800
	Leftovers	269.01	57.920	9.960	2.970	11.920	24.820	8.250
			155.811	26.793	7.990	32.066	66.768	22.193
	Excreta	119.82	60.460	10.060	3.080	14.890	24.020	8.410
			72.443	12.054	3.691	17.841	28.781	10.077

During the whole period studied, the digestibility of the dried substance from the worm leaf had a digestibility of 58.06%. The highest digestibility was recorded in larvae of age I (88.57%), after which, by the end of the larval period, there was a decrease of 31.76 percent.

The raw protein had a digestibility coefficient for the entire studied period of 64.78%. The raw protein digestibility decreased progressively during the studied period, with 26.32%, respectively from 90.66%, in the first larval age, to 64.34%, in the last one. The high digestibility of age I could be explained by the rich content in amides, simple nitrogenous substances, which are found in the young leaf and which are digested much easier than the protein nitrogenous substances, which have the weight in the old leaf.

Table 4
Digestibility coefficients of Băneasa Super hybrid

The larvae age	DM	CP	EE	CF	NEF
I	88.57	90.66	14.09	1.53	93.43
II	75.81	76.31	37.46	1.36	81.96
III	70.29	69.73	72.46	11.92	73.17
IV	66.15	63.57	73.11	19.96	66.04
V	56.81	64.34	36.48	39.39	58.31
I-V	**58.06**	**64.78**	**45.41**	**37.07**	**60.87**

The raw fat from the worm leaf had the minimum digestibility value of 14.09%, in the larvae of the first age and maximum of 73.11%, in the larvae of the fourth age. The results of the digestibility tests regarding the raw fat in the worm leaf are generally inconclusive, as many of these can come from the intestine of the larvae and not from the leaf, which is why, we cannot speak of a determination of the digestibility of the fat itself but of the "ethereal extract", which also contains very large quantities of pigments. Thus, the big differences regarding the evolution of the digestibility of the raw fat during the studied period could be explained.

During the whole larval period, the digestibility of the raw cellulose from the mulberry leaf was 37.07%, being very low in age I, 1.53%, after which it increased progressively, by over 17%, reaching the end of the period studied up to the value of 39.39%. This increase in the digestibility of raw cellulose, as the larvae grow older, is in line with the development of the enzymatic equipment in their digestive tract. Thus, if at age I, in the digestive tract of the larvae, the enzymes involved in the process of cellulose digestion are as non-existent, then they gradually increase, reaching the peak at age V, at which point the weight of raw cellulose from the worm leaf it is also bigger. This aspect, however, negatively influences the digestibility of the raw leaf protein, which during the same period, is experiencing a reduction.

Unclaimed extractive substances from the worm leaf had a digestibility over the entire studied period of 60.87%, the digestibility coefficients registering decreasing values, from 93.43%, in the case of the larvae of age I, at 58.31%, in the case of those of fifth age.

Knowing the value of digestibility coefficients, it was possible to calculate the digestible content for each nutrient separately, then the content of digestible substances in the leaf, so when the report was made to the fresh leaf, 148.75 g of Total Digestive Substance/kg were obtained, and when the report was made on the dried substance from the leaf of the mulberry, its nutritional value was 503.50 g TDS/kg (table 5).

Table 5
The nutritional value calculation of the mulberry leaves (g TDN/kg)

Specification	Raw chemical composition %		Digestibility coefficients	Digestive content %		G Total Digestive substance /kg	
	*	**		*	**	*	**
CP	6.18	20.98	64.78	4.00	13.59	40.03	135.91
EE	1.10	3.70	45.41	0.50	1.68	11.24	37.80
CF	5.31	17.88	37.07	1.97	6.63	19.68	66.28
NEF	12.78	43.29	60.87	7.78	26.35	77.79	263.51
Total						**148.75**	**503.50**

* Reported to the fresh leaves; ** reported to DM

The determination of the digestible energy content of the worm leaf administered in the feed of silk larvae was made based on the relative digestible content of the nutrients contained in it, using the calorific equivalents recommended for monogastric animal species (table 6). In the case of the fresh leaf, the digestible energy content was 639 Kcal/kg, and in the case of the dry substance, 2173 Kcal/kg.

Table 6

Digestive energy of Mulberry leaf

Specification	Digestive content %		Caloric equivalent (Kcal/g)	Kcal/kg	
	*	**		*	**
CP	4.00	13.59	5.78	231.20	785.50
EE	0.50	1.68	9.42	47.10	158.26
CF	1.97	6.63	4.40	86.68	291.72
NEF	7.78	26.35	4.07	316.65	1072.45
Total				**681.63**	**2307.92**

* Reported to the fresh leaves; ** reported to DM

The calculation of the metabolic energy from the worm leaf administered in the feed of silk larvae was done by multiplying the digestible content of each nutrient with the energy equivalents recommended for monogastric (pig) animal species. Considering, however, the specificity of the silkworm's digestion, respectively the similarity with the digestion of the birds, for the estimation of the metabolic energy from the worm leaf, the energetic equivalents recommended for the birds were used (table 7).

The average content in metabolic energy from the fresh mulberry leaf was 630.24 Kcal/kg, when the recommended energy ratios for pigs were used, respectively 630.33 Kcal/kg, when the recommended coefficients for birds were used. In relation to the dry matter of the leaf, the content in metabolic energy was on average 2134.04 Kcal/kg, when the recommended energy coefficients for pigs were used, and 2133.59 Kcal/kg, when the recommended coefficients for birds were used.

Table 7

Metabolic energy of Mulberry leaf

Specification	Digestive content %	Caloric equivalent (Kcal/g)	Kcal/kg

	*	**			*		**	
			swine	birds	swine	birds	swine	birds
CP	4.00	13.59	5.01	4.26	200.40	170.40	680.86	578.93
EE	0.50	1.68	8.93	9.50	44.65	47.50	150.02	159.60
CF	1.97	6.63	3.44	4.23	67.77	83.33	228.07	280.45
NEF	7.78	26.35	4.08	4.23	317.42	329.09	1075.08	1114.61
					630.24	**630.33**	**2134.04**	**2133.59**

* Reported to the fresh leaves; ** reported to DM

In order to determine the efficiency of use of the nutrients in worm leaf by the silk larvae, except for the intake and digestion, which were calculated during the course of the digestibility tests, it was necessary to determine the average growth rate of the larvae and the mass of the silk shell. The data necessary for calculating the efficiency of the use of the worm leaf by the larvae, as well as the results obtained in this respect, were centralized in table 8.

From the data of this table it is observed that in the case of the *Bombyx mori* Baneasa Super larvae hybrid, for every gram of silk wrap is required 10.64 grams of dry matter ingested from the wormwood, respectively 6.18 grams of digested dry matter, resulting in an efficiency of conversion of silk intake (CEI) of 9.40%, respectively of digestion (CED) of 16.19%

Table 8

Efficiency of using Mulberry leaf by Bombix mori Băneasa Super larvae hybrid

Average body mass gained during the whole larvae stage (g)	**Living larvae**	5.0385
	Dry matter	0.9185
Silky shell mass (g Dry Matter)		0.3978
Dry Matter of ingested leaf (g)		4.2310
Dry Matter of digested leaf (g)		2.4566
Ingested Dry Matter/Body mass Dry Matter (g)		4.6067
Dry matter ingested/ Body mass Dry Matter (g)		2.6747
Dry matter ingested/Silky shell Dry Matter (g)		10.6360
Dry matter digested/ Silky shell Dry Matter (g)		6.1754
CEI body mass %		21.7076
CED body mass %		37.3873
CEI silky shell %		9.4020
CED silky shell %		16.1932

The data obtained from the experience performed, regarding the efficiency of the use of the mulberry leaf by the larvae of Bombyx mori, are comparable with those presented in the literature *(Matei A., 1995; Rahmathulla V.K. et al., 2002; Rath S.S. et al., 2003; Sarkar A., 1993; Tzenov P., 1993).*

CONCLUSIONS

Expressed to dry matter from the mulberry leaves, Eforie variety the average values were: CP- 20.98 ± 0.670%, EE- 3.70 ± 0.260%, CF- 17.91 ± 0.4.34%, NEF- 43.27 ± 0.418% and ash- 14.15 ± 0.260%.

At once with vegetation advancement and implicitly during each growth period of silkworm larvae, the mulberry leaf ages and its quality from the chemical composition point of view is decreasing.

During the 30 days of the research, was noticed a decreasing of the moisture with 3.71% and of the CP with 3.11% and in the same time an increasing of the CF with 2.29%.

During the whole period studied, the digestibility of the dried substance from the worm leaf had a digestibility of 58.06%. The dry matter digestibility decreased with 31.76%.

Digestibility coefficients of the CP (64.78%) and of the NFE (60.87%) from the mulberry leaves decreased during the study with 26,03% and 35.12%, respectively.

The CF digestibility, very low at the beginning (1.53%), increased progressively till the fifth larval stage when it was 39,39%.

Nutritional value of the mulberry leaves was 474 g TDN/ kg DM.

Throughout the studied period, the gross enrichment of the worm leaf was on average 4213 Kcal/kg, in the dry substance

In the leaf, the content of digestible energy was, in the case of dry matter, 2308 Kcal/kg.

In relation to the dry matter of the leaf, the content in metabolic energy was on average 2134 Kcal/kg.

In the case of the Băneasa Super hybrid, for each gram of silk wrap, 10.64 grams of dry matter ingested from the mulberry tree are required, respectively 6.18 grams of digested dry substance, resulting an efficiency of conversion of ingestion (CEI) into silk of 9.40%, respectively of the digestion (CEI) of 16.19%

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