

STUDY ON FRUIT AND VEGETABLES IN SUPERMARKETS

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REVIEW, RESEARCH ARTICLE

Abstract

Vegetables and fruits in the supermarket often look impeccable. Bright, in bright colors, beautifully laid out, without a trace. Not only do they have an appealing appearance, but they break down much harder.

Vegetables and fruits in the supermarket can be treated with a wide range of substances, from chemical compounds to different extracts. Manufacturers do not have to mention them on the label because a large part of the substances that give the gloss of the products are considered as production additives, not ingredients.

A report by the Association for Consumer Protection in Romania reveals that in a fruit or vegetable from the supermarket or agri-food market there may be up to 7 types of pesticides. They reach the human body in many ways, the most important of which are the consumption of food treated / contaminated with pesticides, the consumption of contaminated drinking water, penetration by breathing and absorption through the skin; Eating food is by far the most important path, well above the consumption of water and breathing.

Keywords: (max. 5) fruits , vegetables, supermarket, consumption, pesticides

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INTRODUCTION

Fruits and vegetables are important components of the human diet, since they provide essential nutrients that are necessary for most of the reactions that take place in the body. A high consumption of fruits and vegetables (five or more servings a day) has been encouraged, not only to prevent consequences due to vitamin deficiency, but also to reduce the incidence of major diseases such as cancer, cardiovascular diseases and obesity.

As with other crops, fruits and vegetables are attacked by pests and diseases during production and storage, which can lead to damage that reduces quality and quantity. In order to reduce losses and to maintain the quality of the fruit and vegetable harvest, pesticides are used in conjunction with other pest management techniques during cultivation to destroy pests and prevent the occurrence of diseases.

The term "Pesticide" is a general term that includes substances used for a wide variety of purposes, in particular to control a number of living organisms.

Modern pesticides, massively spread in the interwar period, are synthetic chemicals of great complexity with numerous properties, among which undesirable ones are known after many years of use. Being new products for the

environment and for humans, they do not degrade or degrade very slowly by the enzymes naturally existing in nature, accumulating in the soil, plants and organisms, a property called remanence.

Every time we go to the supermarket or to the market we tend to choose the most beautiful fruits and vegetables, that is, those that look like in advertisements. But it should be known that they can hide real poisons. Unfortunately, the Romanian consumer does not have the possibility to check whether vegetables or fruits purchased in an agri-food market or in a supermarket contain pesticide residues. The information presented to the consumer in large supermarket-type shops on the vegetables and fruits on sale relates only to: the country of origin, the quality class and the price per sales unit, and very rarely, information on chemical treatments applied after harvesting is mentioned.

The food industry is one of the biggest proponents of pesticides. Most often we encounter these toxic substances in vegetables and fruits. The use of pesticides is normal nowadays. Even in organic food such substances are found, the only difference is that the food comes from a natural source. As a result of tests carried out by NGOs (Non-governmental organizations), quantities were found that exceed the permissible limit of agrochemical residues in vegetables and fruits, their ingestion being uncontrollable.

The World Health Organisation draws attention to the fact that, every year, an average of 3 million cases of pesticide poisoning are recorded mainly in developing countries. Moreover, of all people, children are the most affected by the harmful effects of these chemicals, even a small amount of pesticides affects their fragile body.

On average, fruits contain more pesticide residues than vegetables. The most impregnated can be: peaches, mushrooms, apples, lettuce and tomatoes. Then the peppers and grapes, and the list goes on. In contrast, root vegetables are more protected (except potatoes) as well as those sheltered from pods such as peas. Many of the vegetables and fruits eaten contain pesticides, but there are affordable and inexpensive ways to partially or even eliminate them completely. The most effective ways to eliminate pesticides from fruits and vegetables are: washing with water, removing shells, removing the first leaves, vinegar, baking soda.

MATERIALS AND METHODS

In the elaboration of the paper we made a questionnaire and gathered information that helped us in the elaboration of the study on fruits and vegetables in the supermarket. The survey was applied online through the Google Forms platform.

The data were collected between 4 and 10 April 2023 and a total of 100 responses were obtained. This questionnaire was mainly addressed to the population aged between 18 and 46 years.

RESULTS AND DISCUSSIONS

Analyzing the demographic data of the respondents, it can be seen that out of a number of 100 respondents, 64% are aged between 18-25 years, 27% are aged between 26-35 years, 5% are aged between 36-45, and 4% are over 46 years old.

Figure no.1 Age of the surveyed population

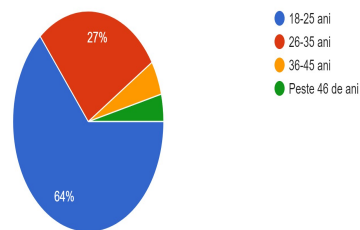
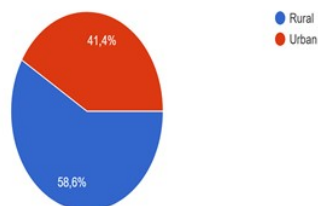


Figure no. 2 Environment of origin of the population



58.6% represents the population in rural areas, and 41.4% represents the population in urban areas. According to statistics, 58 people are from rural areas and 41 people come from urban areas.

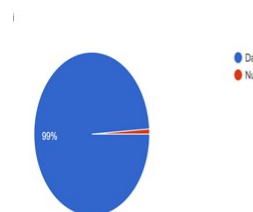


Figure no. 3 Consumers of fruits/vegetables in the supermarket

According to the results presented, 99% consume fruit and vegetables from supermarkets and 1% do not consume. According to statistics, 99 people consume and one person does not consume fruits / vegetables from supermarkets.

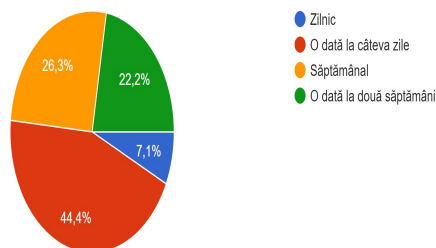


Figure no.4 Period of purchase of fruits/vegetables in supermarkets

The question of 'How often do you buy fruit/vegetables from supermarkets?' 99 people answered, of whom 7.1% (7 people) buy 44.4% (44 people) buy every day, 26.3% (26 people) buy weekly and 22.2% (22 people) buy every other week.

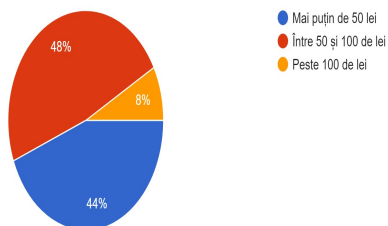


Figure no. 5 Amount spent weekly on fruits/vegetables

The weekly expenditures of the population regarding the consumption of fruits / vegetables are as follows: out of 100 people, 44% consume less than 50 lei, 48% consume between 50 and 100 lei, and 8% over the amount of 100 lei.

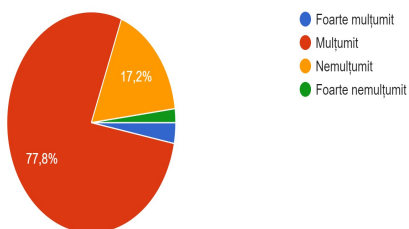


Figure no. 6 People's satisfaction with the quality/price ratio of fruits/vegetables

To the question "How satisfied are you with the quality/price ratio of fruits/vegetables in supermarkets?" 3% replied that they are very satisfied, 77.8% are satisfied, 17.2% are dissatisfied, and 2% are very dissatisfied.

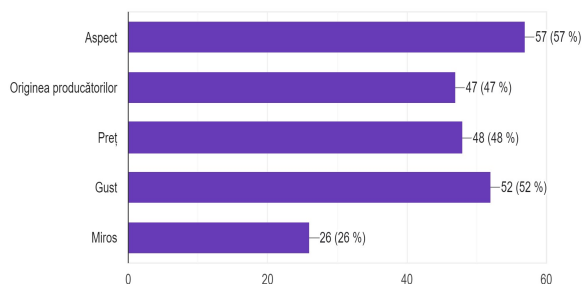


Figure no.7 The most important criteria in choosing fresh fruits/vegetables

The surveyed population was asked what are the most important criteria in choosing fresh fruits/vegetables, for 57% the appearance matters the most, 52% the taste, 48% the price, 47% the origin of the producers, 26% the smell.

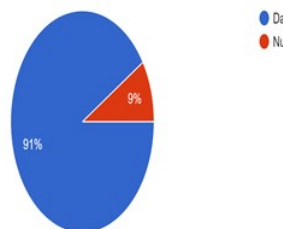


Figure no.8 Washing fruits/vegetables every time before eating

Talking about sanitizing the fruits/vegetables in our questionnaire it turns out that out of 100 people, 91 said they washed before consuming, and 9 people do not do the same.

Before eating fruits/ vegetables must go through a method of sanitization, the reasons are many, from the chemical treatments applied to plants to be protected from pests, to the hands they went through before they reach the store shelf or the soil with which they came into contact and where bacteria and other organisms live that can remain on the peel of food.

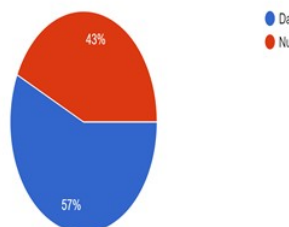


Figure no. 9 Knowledge of the nutritional values of fruits/vegetables in supermarkets.

According to the result obtained, 57% of those who responded to the questionnaire know the nutritional values of the fruits/vegetables in the supermarkets, and a percentage of 43% do not know these values.

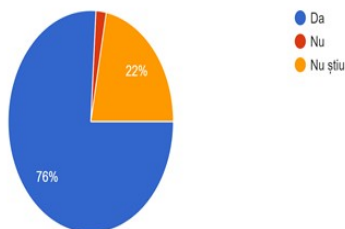


Figure no. 10 Knowledge of the pesticide content of fruits/vegetables.

Most people are aware that fruits/vegetables in supermarkets contain pesticides, our questionnaire shows 76% know the contamination of fruits/vegetables with pesticides, 22% answered that they do not know, and 2% do not know this.

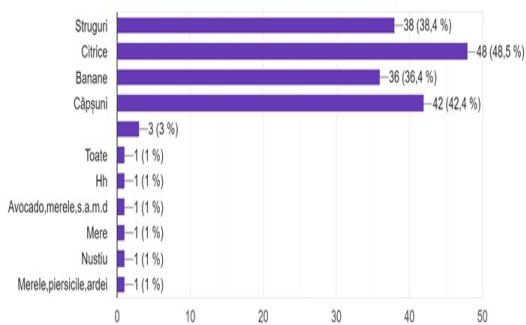


Figure no. 11 Knowledge of the content of pesticides in fruits.

Analyzing diagram no. 12 which represent the knowledge of the contamination with the most pesticides, they are grapes (38.4%), citrus fruits (48.5%), bananas (36.4%), strawberries (42.4%) and besides that they considered that the following fruits would have a high degree with pesticide content they are apples, avocados and peaches.

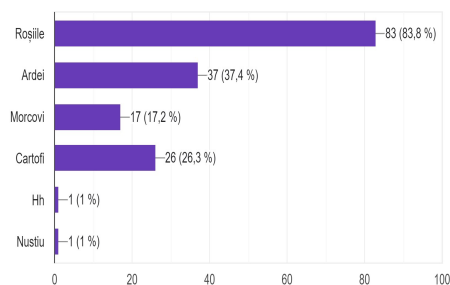


Figure no. 12 Knowledge of the content of pesticides in vegetables.

The result obtained from the question "Which vegetables do you think would contain the most pesticides?" 83.8% consider it to be tomatoes, 37.4% peppers, 26.3% potato, 17.2% carrot, and 1% did not know what to answer.

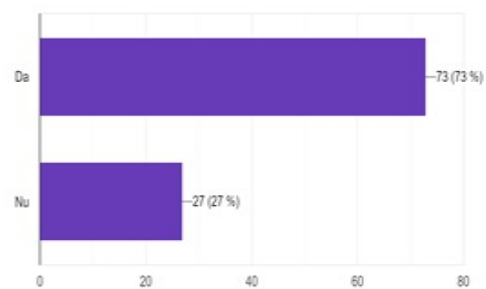


Figure no. 13 Consideration of the body's harmful substance content in fruits/vegetables with the most pleasant appearance.

Every time we go to a supermarket we tend to choose the most beautiful fruits / vegetables, nowadays most people consider that fruits / vegetables with the most pleasant appearance contain substances harmful to the human body. Our result obtained from the questionnaire represents that 73% are aware of this fact, and the 27% are not.

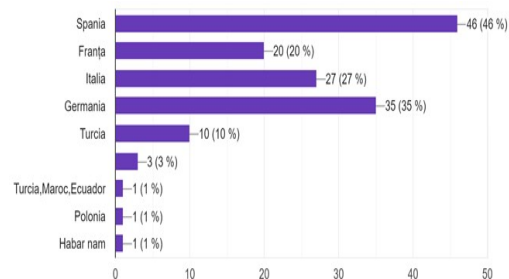


Figure no. 14 Countries of origin of fruits / vegetables with the most pesticides

The population surveyed was asked "The fruits/vegetables whose country you think would contain more pesticides?" and according to the statistics, Spain with 46% is in first place, the second is Germany with 35%, the third with Italy with 27%, the fourth with France with 20%, and on the last place is Turkey with 10%, but what the population does not know is that the most products contaminated with pesticides are exported from Turkey.

Following the evaluation of the answers obtained on the basis of the 10 questions in the questionnaire, less than 50% of those who had a connection with the questionnaire, gave seriousness to the subject and, implicitly, to the completion of this questionnaire.

Romanians buy fruits and vegetables two to three times a week, most of them from the market, according to the latest survey on a large sample conducted by Malagrow Romania.

Half of the consumers prefer Romanian products, and two thirds of the respondents are even willing to pay more for them, thus supporting local farmers.

Studies on laboratory animals have led to the conclusion that the liver is the main target organ of the pesticide prochloraz, which leads to liver cancer in people who consume vegetables/fruits treated with this pesticide.

Unfortunately, consumers are constantly exposed to chemical mixtures in the category of pesticides, such as multiple residues of different pesticides, through the fruit-based diet.

The latest report submitted by the European Food Safety Authority (EFSA) showed that pesticide residues decreased in fruits such as peaches, lettuce, apples and tomatoes, but grew in strawberries, cabbage and wine grapes.

Fruits and vegetables in supermarkets have a small label on them, which says whether they were raised in a pesticide-free environment. A 4-digit code indicates that the fruit in question has been grown in an environment with pesticides or genetic modifications. A 5-digit code means that the fruit or vegetable has been grown in a bio-based environment. 5-digit codes can start with 8 or 9, where 8 means they have been genetically modified and 9 that production is organic.

For consumers, especially the vulnerable (children, pregnant women, the elderly and those with chronic medical conditions), information on chemical treatments applied to vegetables and fruits after harvest is important.

This type of data can help them make informed choices and avoid certain medical conditions generated by these chemicals.

CONCLUSIONS

In conclusion, the study on fruits and vegetables in supermarkets represented a real interest for the Romanian population. Thanks to the questionnaire that was oriented towards the population in Romania, we could see from the answers sent by them that many people got involved and were interested in this topic. On the other hand, there were people who did not get involved or had some interest in this study.

The biggest problem, which is in the minds of all people, is the potential health implication due to exposure to pesticide residues. Limiting the number of approved 45 pesticide summaries would not necessarily reduce the level of residues, as the problem of the other few approved pesticides would still remain.

Existing studies show that organic food generally contains lower levels of pesticide residues and contains more minerals and vitamins and a more balanced protein profile.

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