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STUDY ON ANTIOXIDANT ANALYSIS IN FOOD

Marele Daniela, Maerescu Cristina

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania,e mail: marele_dana@yahoo.com

Abstract: *Because a substantial percentage of food borne diseases outbreaks are caused by home preopared food, is very important to determine their knowledge and food safety . The occupational reactions in the food industry are also related with the knowledge about non-food, food derived or food related sensitizing materials (allergenic materials associated with food processing, manufacturing, transport, trade, transport, retail).*

Key words: *food safety knowledge, preparation practices, ocupational reactions, alergens.*

INTRODUCTION

It has been proven for a long time that a 'calorie' diet can be devitalized by aging, processing, storage, by some fermentation or cooking. Protective nutrition is broadly reducing in nature and generally exhibits an anti-peroperoxidative action associated with lipoxygenase inhibiting capacity. In the case of phenolic compounds, the reducing activity increases with the number of oxides in the lateral cycle. Protective food, as an oxidation-reducing system, plays a role in the hydrogen transfer mechanism. Through this action, it intervenes through various metabolic, respiratory, cellular processes. Until now, it has not been agreed on how to express a food in reducing activity units; under the current conditions, the need for active substances is more important than the energy supply, which is in excess.

MATERIAL AND METHODS

All studied foodstuffs contain permanently a certain group of substances, which condition the physicochemical, biological, including antimicrobial properties. (polyphenols, vitamins: B, C, E, K, sulfur amino acids). A rapid method for determining the protective capacity of protective

foods by their oxidation with potassium permanganate has been set up, a reaction that allows a qualitative characterization of antioxidant-containing food products.

The rate of oxidation is expressed by the time (in seconds) during which a 0,1 N potassium permanganate solution is discolored in a medium containing the product to be investigated.

$$MnO_4^- + 5e^- + 8H^+ \rightarrow Mn^{+2} + 4H_2O$$

Protective agents in food (antioxidants), in aqueous alcoholic medium, etc., decolorize the 0.1N potassium permanganate solution. The property of food protection factors to oxidize condition the antioxidant properties of food protection.

Determining the rate of oxidation of the food :

0.1 g of fine, finely ground, precisely weighed, place in a 50 ml flask, add 10 ml of distilled water at 20 ° C, 40 ° C, 70 ° C, 90 ° C, depending on the temperature at which we want to achieve extraction. After one hour, filter through gauze or filter paper. Pipette 2 ml of the filtered solution, place in a 50 ml beaker, add 1 ml of 20% sulfuric acid solution. After one minute, add a drop (0.04 ml) of 0.1N potassium permanganate solution to the acidified solution and stop the pink color of the solution with a stopwatch. The analysis is performed at a temperature of 18-20 ° C.

Table 1

Aliments with a protective role which decolour the potassium permanganate

Researched material	**Suspension (g/10M0ml)**	**Dilution**	**Decolorization time of 0,1N sol. $KMnO_4$ (sec) (oxidation index)**			
			Extraction temperature			
			20^0 C	**40^0 C**	**70^0 C**	**90^0 C**
Whole flour	1	1:10	2 immediate	2,2 immediate	2,2 immediate	2,6 immediate
White flour	1	0	8s	30s	45s	55s
	1	1:10	Persistă culoarea roz	Persistă culoarea roz	Persistă culoarea roz	Persistă culoarea roz
Honey	16,6	0	18	-	-	-
Alcohol vol.96%		0	56		-	-
		1:10	does not fade	-	-	-
White wine		0	3 immediate	-	-	-
		1:10	3 immediate	-	-	-
Sugar	1	0	does not fade	-	-	-
Beef meat	1	0	does not fade	does not fade	does not fade	does not fade
	1	1:10	does not fade	does not fade	does not fade	does not fade
Pork meat	1	0	does not fade	-	-	-
	1	1 :10	does not fade	-	-	-
Fish	1	0	7	-	-	-
	1	1 :10	15	-	-	-
White bread	1	0	3	-	-	-
	1	1 :10	60	-	-	-

Dark bread	1	0	0	-	-	-
	1	1 :10	25	-	-	-
Joghurt	1	0	immediate	-	-	-
	1	1 :10	immediate	-	-	-
Chamomile	1	0	immediate	immediate	immediate	immediate
	1	1 :10	immediate	immediate	immediate	immediate
Marigold	1	0	immediate	immediate	immediate	immediate
	1	1 :10	immediate	immediate	immediate	immediate

RESULTS AND DISCUSSION

For all products studied and containing protection factors, pink color disappears in less than 30 seconds.

The rate of reaction depends on the dry matter content of the product under investigation. The pink color disappears when the solution is diluted. The deeper the pink color disappears (up to 30 seconds), the more protective the food is.

The degree of activity of the extracts depended on the temperature at which the extraction was performed. Generally, the oxidation rate is higher for cold and aqueous alcoholic extracts than for temperatures of 400C, 700C, 900C. It is obvious the high temperature destructive effect for certain active components.

In the insoluble part of the investigated materials, the amount of active substances is insignificant, only in very large suspensions can be observed a decolorization reaction of the potassium permanganate solution 0,1 Normal.

For fresh foods, the oxidation rate is high (the solution discolors immediately - about 2 seconds); in the case of long storage, the oxidation rate decreases, for example protective food tea, after two years of storage has an oxidation rate of over 30 seconds. (at some samples the pink color persisted even more). So the shelf life of certain foods under certain conditions substantially influences its properties.

After the oxidation rate, the product quality can be deduced. It can be seen that the whole meal has a much higher antioxidant capacity than the white one. They have no protective effect: white sugar, alcohol, meat (potassium permanganate solution does not discolour or the pink color disappears for more than 30 seconds).

The antioxidant properties of a large number of foods have been studied and tested. The most active are the fresh foods, but the oxidation capacity is characteristic of all samples. Although for this index there is no single value, there are certain variation limits on the samples. If the pink color disappears less than 30 seconds. food can be considered protective.

CONCLUSION

Both in industrial processing, commercial, or mass-serving (restaurants, etc.), but also at home, we are exposed to various, more or less professional, risk factors for illness.

In order not to be exposed to these factors or to minimize their effect, it is important that our level of perception, understanding and defense against these risk factors is always awake and equipped with the necessary knowledge baggage.

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