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## NITRITES CONTENT IN SOME RAW DRIED MEAT PRODUCTS

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### Abstract

In this manuscript the content of nitrites is affirmed in 8 terminally none—threaten sausages and 7 raw dry meat products. 718 % in dry sausages, 68,5% in the long-period meat products the nitrite content is under 8 mg/kg. 21,20% from the dry sausages 15,5% from the long period meat products the content of nitrites is under 10 mg/kg. 3,50% from the researches-a dry sausages and 7% from the long period meat products their content of nitrites is 20-30 mg/kg. In 2% from the researches of the dry sausages and in 5% of the long period meat products the content of nitrite is 30-40 mg/kg. Finally in 1,5% in the researches of the dry sausages and in 4% of the long period meat products the content of nitrite is 40-50 mg/kg. The middle content of nitrites in all researches is 8,95 mg/kg.

**Key words:** nitrites, meat products

### INTRODUCTION

Nitrites are the most important ingredients in meat products (N. Prica and sar., 2007). They are already used for 80 years (first legalized in the US in 1925 year).

The primary source of nitrites in human nutrition are the vegetables and cereals, fish, poultry meat and all other types of meat, especially the meat products that have been treated with nitrites during their production. The meat products are the primary source of nitrites (Gangolli and sar., 1994 Penington, 1998).

The average daily intake of the nitrites in the human organism is 1.88 mg, out of which 28% originates from meat products, 43% from vegetables and 16% from cereals. The remaining 12% is believed to originate from atmosphere pollutions.

The meat industry adds nitrites to its meat products in the form of nitrogen and potassium salts. The nitrites have conservative influence and inhibit the

development of some of the bacteria, especially the *Clostridium botulinum* (Honikel,2008). In addition, the nitrites force the occurrence of the characteristic red colour of the meat products, and also intensify the aroma of the meat products and act as antioxidants ( Penington ,1998 ).

Because of their toxic influence to human health, the quantities that are used in the meat industry are limited. In meat products. They are stored in a dry place under lock and key (Perič1985). In meat products which are thermally treated nitrites react with amines and amides in meat and produce N-nitroso – compounds. These compounds occur as a result of reaction between sodium nitrite or nitrogen oxides and precursors as proteins peptides, amino acids and amines present in food (Rywotucki 2001). According to the book of rules for additives and supplements in our country the total nitrite content in the meat products is limited to 100 mg/kg. The same book of rules states that the maximum allowed quantity of residual nitrites in raw meat products is 50 mg/kg.

The objective of this study is to determine the content of residual nitrites in some raw dried meat products.

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## **MATERIALS AND METHODS**

We used 15 raw dried meat products (8 raw sausages and 7 raw dried meat products). All samples were produced in a meat processing company from the Republic of Macedonia. The products have been produced in accordance to the producer's standard production procedure and all veterinarian and sanitary requirements that are in force in R. of Macedonia have been met.

The maximum weight of a sample was 500 gr. After homogenizing the samples, their residual nitrite content was determined by colorimetric mon Zambeli ( V. Djordjevic 1986).

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## **RESULTS AND DISCUSSION**

As Table 1 shows 71.80% of cases had residual nitrite content less than 8 mg/kg, 71.80% had between 8 and 10 mg/kg, 21,2% had between 20 and 30 mg/kg, 3,5% had between 30 and 40 mg/kg, and only 2.0 % had between 40 and 50 mg/kg. and only 1,5%. None of the examined samples contained above 50 mg/kg of residual nitrites.

Table 1.

### Occurrence of residual nitrites content of examined raw dried products

Residual nitrite content in the sample				
< 8 mg/kg	<10 mg/kg	20-30 mg/kg	30-40 mg/kg	40-50 mg/kg
71,80%	21,20%	3,50	2,0%	1,50%

Table 2.

### Occurrence of residual nitrites content of examined raw sausages products

Residual nitrite content in the sample				
< 8 mg/kg	<10 mg/kg	20-30 mg/kg	30-40 mg/kg	40-50 mg/kg
8,5%	15,50	7,0%	5,0%	4,0%

As table 2 shows 68,50% of cases had residual nitrite content less than 8 mg/kg. Had between 8 and 10 mg/kg. 15,50 % had between 20 and 30 mg/kg. 7,0% had between 30 and 40 mg/kg. 5,0% had between 40 and 50 mg/kg. and only 4,0%.

The average content of residual nitrites was 8.95 mg/kg. The latest scientific recommendations for an acceptable daily intake of nitrites suggest 0.05 mg/kg of body mass (Srinivasan i sar. 2005). Based on that notion and the average content of residual nitrites we calculated that by consuming 100 gr of raw dried meat products a man with average weight of 70 kg satisfies 21.7% of his acceptable daily intake of nitrites (Tomovic i sar. 2010).

Similar results for nitrites content in this kind of meat products was also determined by other authors. According to their studies they determined that the residual nitrites content in the fermented raw sausages was 24 mg/kg (Oztekin i sar. 2002). Other authors claim no presence of nitrites for the same kind of products (Hsu i sar. 2009).

## CONCLUSIONS

Due to stated above we can conclude the following:

1. All of the examined meat products showed a residual nitrite content smaller than the legislatively allowed level of 50 mg/kg.

2. The average content of residual nitrites was 8.95 mg/kg.
3. By consuming 100 gr of a raw dried sausage or a raw dried meat product one intakes 21% of the acceptable daily intake of nitrites in the organism.

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