

FRESH SAUSAGE: A TRADITIONAL PORTUGUESE RAW SAUSAGE

Ferreira, M.C.*; Ouakinin, J.S.*; Fraqueza, M.J.*, Sardinha, L.** & Barreto, A.S.*;

*Faculdade de Medicina Veterinária – CIISA – Universidade Técnica de Lisboa

R. Prof. Cid dos Santos – Pólo Universitário – Alto da Ajuda. 1300-477 Lisboa. Portugal.

**C.A.S.O., Póvoa da Galega, Milharado 2665 Malveira. Portugal.

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Background

The traditional Portuguese sausage industry is very rich and varied and comprises raw fresh products and matured ones, in raw or boiled forms. The fresh sausage belongs to the first group (raw fresh products). It is a raw sausage with granulous aspect, made with pork (fresh lean meat and fat) with added seasonings (salt and spices) and, eventually food additives; sheep bowel is used as outer covering. It looks as a chain interrupted by simple twists of the bowel with variable lengths.

The external appearance shows a rosy shining colour with marble aspect, flaccid consistency, with the envelope adherent to the mass and without ruptures. Internally, the product is characterised by a granulous, well connected, white and rose with marble aspect mass. It has got a smell and taste *sui generis*. Due to its characteristics the product should remain at refrigeration (0° to 5°C) or freezing temperatures (below -12°C) up to its consumption. It is eaten after a cook processing.

Due to the characteristics of the product, the Portuguese Standards for Fresh Sausage (NP 723, 1989) recommend a shelf life of 2 days. In the same way, by portuguese law (Decreto -Lei nº 121/98 from March the 8th) and by European Directives nº 95/2/CE and 96/85/CE from February the 20th and December the 19th, respectively, concerning the use of food additives, it is not allowed the addition of any kind of chemical preservatives to the fresh sausage mass, in opposite to what happens in others international fresh sausages, to which it is allowed the addition of sodium sulphite or others preservatives. The addition of sodium sulphite to the mass can improve either the microbiological quality of the sausage, the increase of the shelf life or both. With such scenario, it seems fair to put under the same technological conditions and under the same law protection sausages of different origins but otherwise equals. That is the reason why we proposed a new project of Portuguese Standards for the Fresh Sausage, which study is under way, in which the addition of preservatives is allowed.

Objective

The objective of this study was to elucidate whether the addition of a chemical preservative (sodium sulphite) to the Fresh Sausage mass could improve the microbiological quality of the product and increases its shelf life, without altering its characteristics.

Methods

Fresh sausage formulation:

Pork, water, seasonings, spices, anti-oxidants (E-331, E-300), colouring agents (E-120, E-100), preservative (E-221) in a dose of 450mg/Kg.

The salt and the seasonings are dispersed in water and added to the ground meat. The additives are then added. The sheep bowel is filed and then portioned by hand. The product is immediately refrigerated at 0° to 5°C or freezed at -12°C or less.

Three groups were made with 15 samples each (Group I – fresh sausage without addition of sodium sulphite; Group II – fresh sausage with sodium sulphite added, ; Group III – fresh sausage with sodium sulphite added) and analysed for microbial growth at 2nd and 5th day of storage.

Microbiological analysis included total mesophylic count; coliform and faecal coliform bacteria; *Staphylococcus aureus* and sulphite reducing *Clostridia* spores.

Results and discussion

Table 1: Results of microbiological analysis of fresh sausage with and without Sodium sulphite.

Lots of samples	Without preservative		With preservative	
Day of analysis	2 days (n=15)	2 days (n=15)	5 days (n=15)	
Total mesophylic count (cfu/g)	4.5x10 ⁶	4.2x10 ⁵	9.3x10 ⁵	
Coliform (MPN/g)	>10 and <10 ²	>1 and <10	>1 and <10	
Faecal coliform (MPN/g)	>10 and <10 ²	>1 and <10	>1 and <10	
<i>Staphylococcus aureus</i>	>10 and <10 ²	>1 and <10	>1 and <10	
Sulphite reducing <i>Clostridia</i> spores (cfu/g)	<1	<1	<1	

As can be seen from the results above, after adding sodium sulphite to the fresh sausage formulation, the microbial count was reduced, generally, by 1 log cycle. After 5 days of storage the sausages maintain the same microbiological levels reported on second day of analysis. These results allow to think that the shelf life of this product can be increased, without reducing the quality.

Conclusions

By adding the chemical preservative (sodium sulphite) to the Fresh Sausage formulation, it was possible to increase the shelf life of the product from 2 days to 5 days, at refrigeration temperature (0° to 5°C); on the other hand it was observed an improvement of the microbiological characteristics of the sausage, with a decrease of the values of mesophylic total plate count; coliform and faecal coliform bacteria; *Staphylococcus aureus*, and sulfite reducing *Clostridia* spores by one log cycle, as a mean.

This work confirms that the use of sodium sulphite in the manufacture of Fresh Sausage is technologically advisable and supports the idea that similar products should be covered by the same law instead of regulating groups of products.

References

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