The soya protein in dry sausage industry.

Terra, N. and Martins, J.F.
Departamento de Technologia e Ciencia dos Alime,tos, Centro de Ciècias Rurais. Universidade Fedreal de Santa Maria, 97.100 - Santa Maria, RS, Brasil.

Introduction

Art dominates science yet in the dry sausage industry of the State of Rio Grande do Sul and empirism plays an important role. This explains the wide variety of characteristic even inside a same industry. (2). Among these characteristics some are undesirable such as deep dark red color, dehydration ring and a hard texture.
In this work increasing amounts of soybean protein gel were used with the aim to eliminate these undesirable characteristics (1, 3, 5).

Methods & Materials

An Italian type salami (Table 1) was made and it was divided in six (6) lots each one with one hundred (100) kg (4). Each lot had 0, 1, 3, 5, 7 and 9% of the PS-60 gel added. The PS-60 is one comercial product with 60% protein (table 2) and the gel was made after the mixture in cutter (15 minutos) of one part PS-60 with four parts of water.

Table 1 : Formulation of Italian type salami (with starter)

Item	Amount
Pork (frozen)	60.00 Kg
Beef (frozen)	20.00 Kg
Pork fat (Frozen)	20.00 Kg
Sodium chlorid	3.00 Kg
Glucose	0.50 Kg
Saccharose	1.00 Kg
Cure mixture	0.30 Kg
White pepper	0.20 Kg
Garlic	0.50 Kg
Nutmeg	0.02 Kg
Antioxidant mixture	0.25 Kg

All lots had an outside enclosure of a 60 mm cellulosis casing and all were treated identically. The conditions of maturation was 28°C, h.r. 85 - 90% during four days and dehidration was 16 -18°C, h.r. 75% during forty six days.

Table 2 : The approximate composition of PS-60 used for making the gel

Fraction	%
Moisture	6.0
Protein	60.0
Fat	1.5
Fiber	1.5
Ash	7.5
Carbohydrate	23.5

Samples of all lots were taken during the maturation and dehydration period and pH determination was made periodically. When the dehydration period was concluded, ten (10) experimented judges were asked about preference looking the aspects of color, flavor, texture and external appearance of all the six (6) lots.

Results

Figure 1 shows the variation of pH during the maturation period.

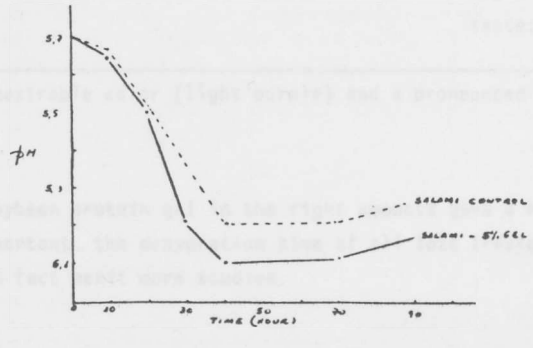

Figure 1 : Variation of pH during the maturation period.

The pH drop was less in the control lot (0 added) than the others. The final pH of all lots was lower than the control lot (pH = 5.3).

Table 3 shows the sensony analysis where experimented judges prefened the 5% PS-60 gel dample.

Table 3 : The sensony analysis with punctuation and comments

Product	Attributes				Comments
	Flavor (40)	Color (30)	Texture (20)	External appearance (5)	
Salami without gel (control)	30	20	10	4	Dark red color, hard texture; dehydration ring
Salami with 1% gel	30	20	10	4	Dark red color; hard texture; dehydration ring
Salami with 3% gel	30	20	15	4	Dark red color
Salami with 5% gel	35	30	20	4	Nice purple color; ideal texture ideal taste
Salami with 7% gel	30	25	15	4	Light purple color: acid taste soft texture
Salami with 9% gel	30	25	10	4	Light purple color; strong acid taste; soft texture

The lots with 7 and 9% showed an undesirable color (light purple) and a pronounced bad acid taste.

Conclusions

It was concluded that addition of soybean protein gel in the right amounts gave a nice purple color and no dehydration ring. Also, very important, the dehydration time of all lots treated decreased almost 50% decreasing the final cost. This fact merit more studies.

References

1 - ASKAR, A., EL-DASHLOUTY, A.A. & DESSOUKI, T.M. - Proteins from unconventional seeds for use in meat products. Fleischwirtsch. 62 (8) : 1001 - 1005, 1982

2.- FREY, W. - Fabricacion fiable de embutidos. Zaragoza. Editorial Acribia, S.A., 1985, 194 p.

3.- HAND, L.W., CRENWELGE, C.H. & TERRELL, R.N. - Effects of wheat gluten, soy isolate and flavorings on proputies of restructured buf steaks. Journal of Food Science 46, 1004 - 1006, 1981

4.- VISIER, A.A. - Industria de la carne. Barcelona. Editorial Aedos, 1986, 304 p.

5.- WAGGLE, D.H., DECKER, C.D. & KOLAR, C.W. - Soya products in meat, poultry and seafood. JAOCS, 341-343, 1981.