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The "Salchichón de Vich" (Vich sausage). I. - Technology and evolution of the microbial flora during its maturing and curing process.

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Introduction.

The "Salchichón de Vich" is a fermented sausage made with the whole meat of adult porks(125 And "Salchichon de Vich" is a fermented sausage made with the whole meat of adult porks(12) Kgs/carcas at min.). The proportion of magers and fat in the initial formulation is 83-85% and 15-17% respectively. The meat of the whole carcas is carefully selectioned and cleaned of fats, tendons, membranes, blood. The magers are rested at 30-50C during 2-4 days before are minced across 4-6 mm and mixed with salt(at levels of 27-30 grs per Kg.), potasium nitrate (0,3-0,5 grs/Kg), milled pepper(1,5-2,5 grams/Kg) and grain black pepper(0,5-1.0 gr/Kg).

After mixed the sausage components, the whole mass remain 2-4 days in chamber at 32-52C. At the end it is stuffed in natural wide hog casings(hog bung) with a maximum long of 70cm and diameter between 60- 120 mm.Is important for a good curing process the use of casings with with a intense infiltration of fat.

The maduration and curing process of "Salchichón de Vich" is made exposing the sausages at natural ambiental cold conditions of the city of Vich during the months of November to May and in cellars ambient in the warm months of summer season. The minimum period of curing pro-Cess are six months and maximum are twelve months, although his shelf-life attaints until eighteen months.

The curing rooms regulate his temperature and relative humidity controlling the windows blinds. In cold period the temperature is mantained between 8° - 12°C and the humidity at 85-90%. In the cellar phase during the summer season, the temperature is mantained between 16-18°C and 90-95% H.R. The natural rooms fur curing and cellars of maturing process are si-tuated at the lowest sectors of the Vich city(Barcelona).

The purpose of this study is to describe the evolution of the microbial flora, its specific and differentiated caracteristics that manage the fermentation process of "Salchichón de Vich" during the two phases of his curing method, the cold fermentation in winter and the cellar maturation in summer.

Materials and Methods.

The fermented sausages of "Salchichón de Vich" examined are of one batch elaborated in Novem-ber of 1984 by a manufacturer of the Vich city. ber of

In each control we take a whole piece of "Salchichón de Vich" with a weight of 2,5 \pm 0,3 Kg. (at the initial time of curing process). The samples are controlled just stuffed the meat in the casings, at 15 days, 2,5,8 and 12 months of curing process. The carcass weight of the hogs utilized in the bactch of "Salchichón de Vich" are of 125 Kg(mean weight).

The methods and media employed to quantitatively determine the bacterial flora in the sausage samples are the recomended by the CENAN("Técnicas para Análisis Microbiologico de Alimentos y Bebidas del Centro Nacional de Alimentación y Nutrición-Ministerio de Sanidad y Consumo, Ed. 1982.). Five lactobacilli strains isolated of M.R.S. medium after characterization of Gram stain(all Gram positive), catalase activity(all negative), benzidine(all negative) and his homofermentative caracter, were screened for his physiological characteristics with API 50CH system. system.

Results and Discussion.

The "Salchichón de Vich" is a The "Salchichón de Vich" is a fermented sausage with an organoleptic quality of international renown, characterized and differentiated because in your composition are not present sugars and as unic additives the salt(NaCl), pepper and potasium nitrate. His curing process is cha-racterized by two steps. The first step of 3-5 months during winter season is the "psicrophy-lic fermentation period". It means that the driveing flora of curing process are bacterial maximum population is reached at 2 - 3 months of fermentation period. In the second step, the "cellar curing process of "Salchichón de Vich". slows and the enzimatic

In the Table 1 the total bacterial counts are presented. The predominant flora consisted of lactobacilli since 10 - 15 days after stuffing process. In Table 2 are described the physiolo-gical characteristics of five lactobacilli strains isolated in M.R.S. medium in the "Salchi-chón de Vich" with two months of curing time. All strains of lactobacilli are Gram(+), cata-lase (-), benzidine (-), homofermentatives and his optimal temperature for growth is 18-20°C and at 1500 time reputh is inhibited completely. and at 45°C his growth is inhibited completely.

The change or decrease in bacterial activity between the 3th. and 5th. months of curing pro-cess coincides with the more intensive loss of humidity, below the 40% of sausage mass.

	Fermentation, periods													
	Initial	meat paste	15 days	2 months	5 months	8 months	12 months							
Total counts mesophylic aerobic sp. at 32°C	1,2	. 10 ⁵	8,0.10 ⁶	1,0.107	1,2.10 ⁶	9,0.104	3,2.104							
Total counts mesophylic aerobic sp. at 20ºC	4,5	. 10 ⁶	9,0.10 ⁷	6,0.10 ⁷	2,5.10 ⁶	9,0.10 ⁵	5,3.10 ⁴							
Enterobacteriaceae		800	. <100	((-)	(–)	(-)							
Micrococaceae	2,0	. 10 ⁴	9,0.10 ³	8,0.10 ³	4,0.10 ³	1,0.10 ³	<100							
Streptococci/Pediococci	1,5	• 10 ⁴	9,0.10 ⁶	4,0.104	4,0.10 ³	1,2.10 ³	150							
Lactobacilli at 32ºC	2,0	. 10 ⁴	1,4.10 ⁸	4,4.10 ⁸	2,2.107	1,0.10 ⁵	3,0.104							
Lactobacilli at 20ºC	4,0	. 104	5,0.10 ⁸	1,2.10 ⁹	7,0.107	1,2.10 ⁶	8,0.104							
Yeast	2,0	. 10 ⁴	3,0.10 ³	2,2.10 ³	500	<100	<100							

Table 1: Viable bacterial counts on samples of fermented sausage "Salchichón de Vich".

The counts of Salmonella and Clostridium are negative in all samples examined

Bacteria per gram

Table nº2 Physiological characteristics of lactobacilli isolated from fermented sausage "Salchichón de Vich"

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Note: System API 50 CH

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