

QUALITY ASPECTS OF A LOW FAT LINE OF TYPICAL ITALIAN PIGMEAT PRODUCTS

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SUMMARY

The quantity of fat and salt in a diet is of concern to most health- and fitness-conscious consumers. The meat industry is developing products with low-fat and salt content. The aim of this research is to show the results obtained in a new line of cured and aged low-fat low-salt pigmeat products. The raw meat cuts used, some production characteristics, the content of moisture, fat, protein and salt, the caloric value of "Casareccio", "Milano", "Cacciatorino" and "Bologna" salami and of "Pancetta", "Capocollo" and "Lombetto" are reported. Compared with the ordinary products, the fat and salt content is greatly reduced. Therefore, it is possible to produce high quality pigmeat products with a low-fat low-salt content. This, however, does require long experience in processing.

INTRODUCTION

Today's consumers are not only interested in quality products which taste good and are convenient but are also concerned with the nutrition, safety and wholesomeness of the food they consume. The quantity of fat and salt in a diet is of concern to most health- and fitness-conscious consumers (Biton, 1991; Egbert et al, 1991).

Food consumption patterns have been changing in recent years. Trends indicate a shift from visible, separable fat consumption (butter, oil) and a decrease in the intake of high-fat animal food such as beef, pork, pigmeat products and cheese (Lambert, 1991; Severini & Dominici, 1992).

The need for fat reduction in the diet has been further emphasized by the recommendations of the American Cancer Society and American Heart Association to restrict fat-derived calories to less than 30% of total caloric intake (Egbert et al, 1991).

In response to the increasing demand for products with a lower fat content, it is essential that the meat industry develops low-fat products tailored to meet the needs of these diet-conscious consumers (Langley-Danysz, 1991).

However, the removal of fat from meat products requires a fat replacer providing the flavour, texture and mouthfeel of fat in the finished products. Many replacers are available and are principally composed of specially processed oat bran or iota-carrageenan, with a blend of flavours and seasonings designed to enhance the flavour of different reduced-fat products. Replacers have been developed mainly for products which are to undergo cooking, such as ground beef (hamburgers) and pork sausages. The results are quite satisfactory, since there are no differences between low-fat and ordinary products as concerns the sensory and physical properties. (Egbert et al, 1991; Pszczola, 1991; Taki, 1991; Tjomb, 1991).

A fat replacer has not yet been used in aged and cured pigmeat products.

The simple reduction of fat would be the most efficient method of producing low-fat cured products. However the flavour, softness and texture of products such as cured pigmeat, salami and Bologna salami are also related to the fat content. Besides, the presence of a certain amount of fat is needed in order to achieve the best results (Romiti et al, 1980; Taki, 1991).

Therefore, the food industry has to make several changes in its product lines and/or methods of preparation, taking both consumer concerns and the products typical characteristics into consideration.

The livestock industry has changed its feeding and management practices to produce leaner animals. The pigmeat industry must modify production techniques by choosing quality carcasses and cuts of meat, setting new compositions and changing the curing and aging processes (Taki, 1991). The aim is to maintain the traditional product quality in low-fat pigmeat products.

This research was carried out to show the results reached in a new line of low-fat and low-salt cured pigmeat products.

MATERIALS AND METHODS

Some kinds of salami ("casareccio" salami, "Milano" salami, "cacciatorino" salami and "Bologna" salami), and cured and aged pigmeat products ("pancetta", "lonza" and "lombetto") produced in an industry of our region were considered in the following investigations. The reduction of the fat and salt content is specially important in these products. The raw meat cuts utilized and some production parameters

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(grinding type; natural or synthetic casing; diameter; salt percentage added to the mixture or used for dry-curing; aging period; percentage of weight loss during aging) are reported in Table 1. The raw meat cuts, closely trimmed of fat, came from lean carcasses. The salt used was up to 23-25% less than ordinary products. The final aim was to reduce fat and salt content in the finished products by at least 10% and 1%, respectively.

Table 1 - Raw meat cuts and some characteristics of the low-fat low-salt pigmeat products considered

	CASARECCIO	MILANO	CACCIATORINO	BOLOGNA	PANCETTA (rolled)	CAPOCOLLO	LOMBETTO
CUTS	loin ends ham retails	belly shoulder	ham retails	shoulder retails fat emuls.	belly	neck	loin
GRINDING	medium	fine	medium-fine	-	-	-	-
CASING	natural	synthetic	natural	-	synthetic	natural	natural
DIAMETER, mm	35	105	30	280	12	varying	varying
% SALT	2.7*	2.7*	2.7*	3.0*	4.0.	4.0.	4.0.
AGING DAYS	35	100	21	7^	21	60	45
% LOSS	30	28	29	11	15	33	33

Legend: *added to the mixture; ^used for dry-curing; ^after cooking.

Moisture, fat, protein and salt (NaCl) content were determined using AOAC methods. The caloric value was determined as indicated by Osborne & Voogt (1978). Three samples for each kind of product were analyzed.

RESULTS AND DISCUSSION

Average content of moisture, fat, protein, salt and caloric value of salami and other cured and aged products are shown in Table 2.

TABLE 2 - Average composition and caloric value of low-fat low-salt pigmeat products considered

	CASARECCIO	MILANO	CACCIATORINO	BOLOGNA	PANCETTA (rolled)	CAPOCOLLO	LOMBETTO
% MOISTURE	41.9	42.6	41.8	56.3	44.9	44.1	46.4
% FAT	21.2	23.9	27.3	22.2	26.9	25.5	7.2
% PROTEIN	29.5	26.5	24.2	15.5	20.7	25.6	38.9
% SALT	3.8	3.7	3.8	2.2	3.6	3.9	3.4
KCal	309	321	342	262	325	332	220

Table 3 shows the composition and the caloric value of some ordinary salami and cured aged pigmeat products. The fat percentage of the products considered is 10-15% lower than ordinary products. The reduced fat content leads to an increased percentage of moisture and protein.

TABLE 3 - Average composition and caloric value of some ordinary pigmeat products.

	% MOISTURE	% FAT	% PROTEIN	% SALT	KCal	REFERENCES
CASARECCIO	35.3	31.1	27.3	4.5	390	personal data
MILANO	35.9	33.8	21.2	6.0	390	personal data
MILANO	28.2	38.3	28.3	3.7	458	Riva et al, (1988)
CACCIATORINO	26.9	35.2	27.9	4.4	428	Riva et al, (1988)
CACCIATORINO	39.2	31.4	20.1	7.0	363	personal data
BOLOGNA	46.9	31.4	13.7	-	337	Carnovale & Miuccio, (1981)
BOLOGNA	50.8	33.0	12.6	2.4*	347	Pizza et al, (1982)
PANCETTA	41.0	40.9	14.3	-	425	Fidanza & Versigliani, (1981)
PANCETTA	33.2	50.4	12.1	4.3*	502	Faccini & Furini, (1982)
CAPOCOLLO	36.3	40.2	20.8	5.8*	445	Carnovale & Miuccio, (1981)
LOMBETTO	46.0	15.5	31.5	5.5	265	personal data

Legend: *personal data

Compared with the ordinary product, the composition of low-fat Bologna containing only 22% fat 262 Kcal is very innovative. The data show also how typically fatty products like "pancetta" (dry-cured rolled belly) may have a highly reduced fat content, without losing its flavour and softness.

"capocollo" (cured and aged neck muscles) and "lombetto" (cured and aged loin) have a very low fat content composed exclusively of intramuscular fat.

The salt content of these products also proved to be lower than in ordinary products.

The choice of leaner meat cuts is of utmost importance in reducing fat content. The aging condition has been modified and the time reduced to prevent excessive hardening and weight loss and to preserve the traditional taste. These parameters are strictly dependent on the moisture/fat ratio.

A modification of the process is also required by the reduced content of salt, used not only for flavouring but also as a preservative. The control of pH and a_w trends is particularly important to guarantee a regular aging process and inhibit any pathogens.

The use of selected and closely trimmed meat cuts implies a rise in production cost. Nevertheless, the retail price is not a great marketing concern. As is demonstrated by the penetration index, a rising percentage of consumers are willing to spend more for healthy low-fat products (Lambert, 1991). The industry management may partly recover production cost by planning a parallel line of ordinary products using the more fatty meat cuts of less value.

CONCLUSIONS

As already mentioned, the characteristics of the meat are of primary importance for producing low-fat high quality products. The pigmeat used must have an adequate content of intramuscular fat and come from lean carcasses, with a low amount of back fat.

Therefore, it is possible to produce low-fat pigmeat products of high quality, without using fat replacers. Nevertheless, both know-how in the aging and curing processes and certain meat characteristics which only long experience in this field can ensure are required.

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