

NUTRITIONAL VALUES OF 11 PORK SECONDARY MEAT-CUTS AND LIVER

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Abstract – Analyses to establish nutrition labelling defined by the EU Regulation 1169/2011, i.e fat, saturated fatty acids, carbohydrate, sugars, proteins and salt were applied for 11 meat-cuts and liver from for pork carcasses commonly pigs produced in France. The nutritional data are compared to those from earlier studies.

Key Words – nutrients, nutrition labelling.

I. INTRODUCTION

A campaign to analyze nutrition traits for nutritional labelling has been carried out on meat-cuts and liver as prepared in slaughterhouse for their use in processed meat. This action is part of a larger study supported by Inaporc.

II. MATERIALS AND METHODS

Meat-cuts and liver were chosen according to the interest expressed by meat processors: backrind, backfat and jowl rindless, picnic, shoulder upper half, loin, ham without shank and shank boneless-rindless-defatted, thin belly boneless-rindless, lean trimmings (10% and 20 % fat) and liver. The nutrients were those of regulation (UE) n°1169/2011 nutritional declaration. The samples were a blending of meat-cuts from a female and a castrated male of a same batch. For livers, bellies and lean the 2 animals came from other batches. The samples were selected in 3 slaughterhouses, in autumn and in spring to obtain as large variation in nutrient contents as possible for pigs commonly produced in France. Carcass weights were between 90.0 and 96.0 kg and Lean Meat Percentage between 59 and 63%. The samples were grinded 48 hours post mortem and a laboratory sample of about 400 g was frozen at -20°C until analyses. Moisture, protein, fat and ash were determined using Afnor methods, FA-ME using Rule method [1], SFA were calculated after converting FA-ME in FA. Sugars and carbohydrates were determined by colorimetry, and sodium by AAS.

III. RESULTS AND DISCUSSION

Mains results are summarized in table 1.

Table 1: Physico-chemical composition of meat-cuts and liver

	Fat g /100 g			SFA g /100 g			Carbohydrates, Sugars g /100 g			Proteins g /100 g			salt (2,5 x sodium) g /100 g		
	n	Mean	Std dev	n	Mean	Std dev	n	Mean	Std dev	n	Mean	Std dev	n	Mean	Std dev
Rind	30	16.4	6.2	30	5.1	1.8	5	0.2	0.0	6	35.0	2.5	5	0.36	0.05
Backfat	30	80.6	4.1	30	28.7	2.2	5	0.1	0.0	6	4.5	1.2	5	0.10	0.02
Jowl	30	47.5	4.0	30	16.0	1.4	5	0.1	0.1	6	11.6	0.7	5	0.17	0.04
Picnic	20	12.3	2.7	20	4.1	1.0	4	0.2	0.1	5	18.9	1.1	4	0.20	0.02
Shoulder upper half	20	10.4	2.1	20	3.6	0.7	4	0.3	0.1	5	19.2	0.6	4	0.20	0.02
Belly	21	28.7	2.9	21	10.2	1.2	5	0.2	0.1	6	15.9	1.2	5	0.18	0.03
Loin	15	6.2	2.7	15	2.2	1.0	3	0.4	0.1	5	22.3	1.3	3	0.16	0.02
Ham	30	6.4	1.1	30	2.1	0.4	5	0.3	0.0	6	20.9	0.6	5	0.18	0.02
Shank	29	7.3	1.2	29	2.4	0.5	5	0.3	0.0	6	20.2	1.0	5	0.22	0.00
Lean trimming app. 10% fat	27	12.9	4.0	27	4.6	1.6	5	0.2	0.2	6	18.8	2.1	5	0.17	0.02
Lean trimming. app. 20% fat	33	25.2	4.2	33	9.4	1.8	5	0.3	0.1	6	17.3	1.4	5	0.17	0.00
Liver	29	4.2	0.7	29	1.7	0.2	20	1.8*	1.2*	6	20.6	0.5	5	0.34	0.03
							5	1.1**	1.2**						

*carbohydrates, **sugars

Protein contents are close to earlier data, high in cuts like loin (22.3 g), ham (20.9 g), shank (20.2 g) or liver (20.6 g). Backfat has the lowest (4.5 g) of which almost half is collagen (2.1 g). Rind has got the highest content in protein (35.0 g), most of it being collagen (28.9 g).

Protein contents in g / 100 g in bibliography or previous studies and the current study are:

Backfat: between 4.1 and 5.0 [2, 3] vs 4.5; **belly:** between 15.4 and 17.8 [4, 3, 2] vs 15.9; **ham:** 20.7 and 21.5 [3, 5] vs 20.9; **shank:** 18.0 and 19.0 [3, 2] vs 20.2; **liver:** between 20.1 and 21.1 [4, 2, 3] vs 20.6; **loin:** between 19.8 and 22.3 [4, 2, 3, 5] vs 22.3.

Fat and **SFA** contents depend on data origin, many factors occur like genetic, feed, weight at slaughter, cut, though, as far as possible results from special breed or feed were not taken into account here.

Fat contents in g / 100 g in previous studies vs current study are:

Backfat: between 72.0 and 82.5 [3, 2] vs 80.6; **belly:** between 21.1 and 33.7 (2, 3, 4) vs 28.7; **ham** : 2.0 and 5.1 [3, 5] vs 6.4; **shank** : 7.5 and 12.2 [3, 2] vs 7.3; **liver:** between 3.4 and 4.9 [3, 4, 2] vs 4.2; **loin:** between 1.9 and 7.15 [3, 2, 4, 5] vs 6.2. For **rind**, the variability is important because of the presence or not of subcutaneous fat. For loin the value depends on the cut.

SFA contents in **g/100g** in bibliography vs current study are:

Backfat: between 26.4 and 32.0 [3, 6, 2] vs 28.7; **belly:** between 7.2 and 14.4 [7, 2, 3, 4] vs 10.2; **ham** : 0.8 [3] vs 2.1; **shank:** 5.1 [2] vs 2.4; **liver:** between 1.0 and 2.3 [3, 2, 4] vs 1.7; **loin:** between 0.8 and 0.9 [2, 3, 4] vs 2.2. For rind and loin, SFA results varied a lot, for the same reasons as for fat.

All **sugars** are **carbohydrates** and their contents are similar for all **meat-cuts**, except for liver. Their contents in g / 100 g in bibliography or previous studies and current study are: 0.0 in Danish data bank [3] for **backfat**, **belly**, **ham**, **shank**, **loin** and Belgian table for **belly** and **loin**. In the current study results are under 0.5 g/100g. For **liver** which contains glycogen, data are between 0.0 and 0.93 g/100g for sugars [3, 4, 2] vs 1.1, and between 0.9 and 3.0 g/100g for carbohydrates [4, 3] vs 1.8.

Salt contents (2.5 x sodium) in g /100g are of the same order than other data, except for liver where our result is 1.5 times higher: **backfat:** 0.05 and 0.09 [2, 3] vs 0.11; **belly:** between 0.14 and 0.17 [3, 5, 2, 4, 7] vs 0.20; **ham:** 0.12 and 0.17 [5, 3] vs 0.18; **shank:** 0.15 and 0.21 [2, 3] vs 0.22; **liver:** between 0.19 and 0.20 [2, 4, 3] vs 0.34; **loin:** between 0.11 and 0.21 [5, 4, 2, 3] vs 0.16.

IV. CONCLUSION

This study presents the typical nutrient composition of 11 meat-cuts and liver from pigs commonly produced in France and usually sold by slaughterhouses to be used by meat processors.

These average can be used as actual average values of the ingredients used in processed meat, for calculation of nutritional values as proposed in EU regulation, n° 1169/2011.

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