

# Comparison of fatty acid profiles of eight meat cuts in pigs commonly produced in France

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Introduction: Fatty acid (FA) profiles have been carried out on 8 meat cuts from pigs commonly produced in France. Meat cuts have been prepared in slaughterhouses for their use in processed meat.

## Materials and methods

### Fatty acids

FA profiles were determined by GLC, after total lipid extraction and transmethylation.

### Carcasses









- Weights between 90.0 and 96.0 kg.
- Lean Meat Percentage between 59 and 63%.

### Samples

- Blending of 8 meat cuts from a female and a castrated male of a same batch.
- 3 slaughterhouses, in autumn and spring to obtain as large variation in FA as possible for pigs commonly produced in France.

## Results / discussion

Table 1: Total fat content (g/100g) and fatty acid composition (% fatty acid) of the 8 meat cuts (n=9)

Meat cut	Backfat	Rind	Jowl	Picnic	Ham	Shank	Shoulder <sup>A</sup>	Loin	RMSE <sup>B</sup>	p-value
										
<b>Total fat (g)</b>	80.6 <sup>a</sup>	12.9 <sup>c</sup>	47.4 <sup>b</sup>	11.7 <sup>c</sup>	6.6 <sup>d</sup>	7.1 <sup>d</sup>	8.8 <sup>cd</sup>	6.7 <sup>d</sup>	3.033	***
<b>SFA (%)</b>	<b>40.0<sup>ab</sup></b>	<b>35.3<sup>d</sup></b>	<b>38.4<sup>abc</sup></b>	<b>38.1<sup>abc</sup></b>	<b>37.7<sup>bcd</sup></b>	<b>37.0<sup>cd</sup></b>	<b>39.3<sup>abc</sup></b>	<b>40.5<sup>a</sup></b>	<b>1.747</b>	***
C12:0	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.000	ns
C14:0	1.42 <sup>ab</sup>	1.39 <sup>ab</sup>	1.44 <sup>a</sup>	1.36 <sup>ab</sup>	1.28 <sup>b</sup>	1.28 <sup>b</sup>	1.34 <sup>ab</sup>	1.30 <sup>ab</sup>	0.102	**
C16:0	24.5 <sup>a</sup>	23.2 <sup>b</sup>	24.1 <sup>ab</sup>	23.7 <sup>ab</sup>	23.3 <sup>ab</sup>	23.0 <sup>b</sup>	24.2 <sup>ab</sup>	24.4 <sup>a</sup>	0.849	***
C18:0	13.1 <sup>ab</sup>	10.0 <sup>c</sup>	12.1 <sup>b</sup>	12.2 <sup>b</sup>	12.3 <sup>b</sup>	11.8 <sup>b</sup>	12.8 <sup>ab</sup>	13.9 <sup>a</sup>	0.929	***
<b>MUFA (%)</b>	<b>45.3<sup>b</sup></b>	<b>50.5<sup>a</sup></b>	<b>48.8<sup>a</sup></b>	<b>49.0<sup>a</sup></b>	<b>49.0<sup>a</sup></b>	<b>50.3<sup>a</sup></b>	<b>47.6<sup>ab</sup></b>	<b>47.3<sup>ab</sup></b>	<b>2.173</b>	***
C16:1n-7	2.33 <sup>c</sup>	3.27 <sup>a</sup>	2.89 <sup>ab</sup>	2.96 <sup>ab</sup>	2.89 <sup>ab</sup>	2.96 <sup>ab</sup>	2.92 <sup>ab</sup>	2.61 <sup>bc</sup>	0.282	***
C18:1n-9	38.5 <sup>b</sup>	41.3 <sup>a</sup>	40.9 <sup>ab</sup>	40.4 <sup>ab</sup>	40.4 <sup>ab</sup>	41.3 <sup>a</sup>	39.0 <sup>ab</sup>	39.4 <sup>ab</sup>	1.788	**
C20:1n-9	0.79 <sup>ab</sup>	0.89 <sup>a</sup>	0.77 <sup>b</sup>	0.74 <sup>b</sup>	0.79 <sup>ab</sup>	0.81 <sup>ab</sup>	0.78 <sup>b</sup>	0.77 <sup>b</sup>	0.072	**
<b>PUFA (%)</b>	<b>14.2</b>	<b>13.6</b>	<b>12.3</b>	<b>12.4</b>	<b>12.7</b>	<b>12.3</b>	<b>12.6</b>	<b>11.8</b>	<b>2.052</b>	ns
C18:2n-6	12.1 <sup>a</sup>	11.2 <sup>ab</sup>	10.1 <sup>ab</sup>	9.9 <sup>ab</sup>	9.8 <sup>ab</sup>	9.4 <sup>b</sup>	9.9 <sup>ab</sup>	9.3 <sup>b</sup>	1.684	*
C18:3n-3	0.86	0.81	0.79	0.66	0.60	0.62	0.62	0.58	0.190	**
C20:4n-6	0.20 <sup>c</sup>	0.46 <sup>bc</sup>	0.30 <sup>c</sup>	0.86 <sup>ab</sup>	1.09 <sup>a</sup>	1.06 <sup>a</sup>	0.90 <sup>a</sup>	0.89 <sup>a</sup>	0.286	***
C20:5n-3	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.028	ns
C22:5n-3	0.10 <sup>b</sup>	0.10 <sup>b</sup>	0.10 <sup>b</sup>	0.12 <sup>ab</sup>	0.18 <sup>a</sup>	0.14 <sup>ab</sup>	0.18 <sup>a</sup>	0.16 <sup>ab</sup>	0.049	***
C22:6n-3	0.02	0.00	0.01	0.00	0.02	0.04	0.01	0.02	0.037	ns

Shoulder<sup>A</sup> shoulder upper half; RMSE<sup>B</sup> root mean square error; a-d Within a row, means lacking common superscript letters differ ( $P < 0.05$ ); ns =  $P > 0.05$ ; \* =  $P \leq 0.05$ ; \*\* =  $P \leq 0.01$ ; \*\*\* =  $P \leq 0.001$ .

### C18:1n-9, C16:0, C18:0, C18:2n-6

Were the dominant FA across all cuts in agreement with other literature.

### Saturated fatty acids (SFA)

Percentages between 35.3 and 40.5%, nevertheless hypercholesterolemic FA C12:0 and C14:0 were very low, 0.10% and 1.28 to 1.44% respectively.

### Mono unsaturated fatty acids (MUFA)

Represented almost the half of FA with a minimum of 45.3% for the backfat.

### Polyunsaturated fatty acids (PUFA)

Major PUFA C18:2n-6 derived entirely from the diet showed higher proportions in backfat (12.1%) than in the loin (9.3%), the second PUFA was 18:3n-3, from 0.58% in loin to 0.86% in backfat. Long chain n-3 and n-6 PUFA were present at low percentage.

### Total fat

In ham, shoulder or loin was higher (6.55 to 8.84 g/100g) than in other studies due to the adhering subcutaneous or inter-muscular adipose tissue in the present study.

## Conclusion

This study presents the typical fatty profiles of 8 meat cuts from pigs commonly produced in France and usually sold by slaughterhouses to be used by meat processors.

