

Fatty acid profile of meat, liver and heart from lambs fed oil components

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Introduction

The composition and quality of meat products are determined by several factors, in that from the breeder side:

- feeding method
- breed origin

Introduction



Intensive recent studies on modifying healthy quality of meat have focused mainly on selected muscles and/or fats.

Not many research are aimed to determine the health quality of whole culinary elements and slaughter by-products, like **liver, heart**, kidney, lungs and ... testicles

Aim of the study

- ▶ to determine the effects of fattening lambs with sunflower cake and linseed and adding vitamin E on the fatty acid profile of fat from *m. longissimus lumborum*, liver and heart

Material and methods

Animals: 18 ram-lambs; 50% of Koluda sheep (KS)
+ 50% of F₁ **Ile de France** x KS (IFxKS)

- ▶ intensive fattening to 32-37 kg
- ▶ 3 feeding groups; all-mush *ad libitum* + grass hay;
 - C** - all-mush based on cereal and rapeseed meal
 - SCL** - all-mush with SC (23,5%) and L (5%)
 - SCL+E** - **SCL** all-mush + 0,2% vitamin E

Material and methods



Material: fat extracted from:

- ▶ *m. longissimus lumborum* (**LLF**)
- ▶ liver (**LF**)
- ▶ heart (**HF**)

**Fatty acid composition was analysed
by gas chromatography (AOAC 905.02)**

**Results were analysed by two way analysis of
variance**

Results

SFA in organ's fat

LF contained more SFA than LLF and HF;

56,7% vs. 48,4 and 45,9% ($P \leq 0.01$)

- with higher C17:0 and C18:0 and lower C14:0 and C16:0 compared to LLF

SFA content of HF was in between.



Results



MUFA in organ's fat

MUFA was most abundant in LLF, followed by LF and HF;

42,6%, 33,9% 29,9% ($P \leq 0.01$)

.... this corresponded with content of the main MUFA acid
C18:1; 38,7; 29,2 and 26,3% respectively.

Results

PUFA in organ's fat

HF had a higher proportion of PUFA compared to LF and LLF

25,3% vs. 11,3 and 9,0% ($P \leq 0.01$)

.... this corresponded with content of:

C18:2; 19,6% vs. 9,1 and 7,0% and

C18:3 n3; 0,82% vs. 0,73 and 0,64% respectively.

Results

CLA content in the organs

- highest in the **liver**,
followed by **heart and muscle**

... respectively: **41,2** vs. **6,2 and 4,5** mg/100 g

($P \leq 0.01$)

Results

Health parameters of organ's fat

The best for **HF** with similar values for **LF** and **LLF**

- ▶ PUFA:SFA; **0,57** vs. **0,21** and **0,19** ($P \leq 0.01$)
- ▶ DFA:OFA; **3,96** vs. **3,40** and **2,58** ($P \leq 0.01$)

Effect of feeding oil components

- no significant effect on total SFA in organs
... with decrease C16:0; 22,7 (C) vs. 19,6% (SCL)
and increase C18:0; 22,4 vs. 28,0% respectively

Effect of feeding oil components

Decreased MUFA; 39,8% (C) vs. 33,3% (SCL)

Increased PUFA; 12,1% (C) vs. 16,8% (SCL)

**Organs of SCL groups had less CLA than C;
16,3 vs. 19,4 mg/100 g**

In general

... sunflower cake and linseed feeding was beneficial for health parameters of fat from investigation organs;

PUFA:SFA; 0,35 (SCL) vs. 0,27 (C)

DFA:OFA; 3,51 vs. 2,92 respectively

... supplementation SCL all-mush with vitamin E enhanced this beneficial effect



Thank you for attention !!