



Effect of probiotics supplementation of milk replacer on the quality of lamb meat

A. Santillo

R. Marino, G. Annicchiarico, D. E. Russo, D. Ruggieri, M. Albenzio

Department of Production Sciences, Engineering
and Economics for Agricultural Systems

University of Foggia, ITALY

(a.santillo@unifg.it)



Milk feeding is a major factor affecting nutritional characteristics of meat in unweaned lambs due to differences in composition between ewe milk and milk replacer (Napolitano et al., 2002).

Microbial feed additives facilitate the establishment and maintenance of suitable microbial flora in the gastrointestinal tract (Agarwal et al., 2002).

AIM OF THE WORK

This study was undertaken to assess the effect of milk replacer containing *Lactobacillus acidophilus* and a mix of *Bifidobacterium longum* and *Bifidobacterium lactis* on the quality of lambs meat.

Animals were subjected to 4 different feeding regimes:

Maternal milk MM

Milk replacer AM

**Milk replacer with
Lb. acidophilus AML**

**Milk replacer with
B. lactis and *B. longum* AMB**

Lambs were slaughtered at 42 d and meat was analysed for

- ✓ chemical composition
- ✓ rheological properties
- ✓ fatty acid composition

Data were processed by ANOVA using the GLM procedure of SAS system.

Table 1. Effect of feeding regime on chemical composition and rheological properties of lambs meat.

Item	Feeding regime ¹				SEM	Effect, P
	MM	AM	AML	AMB		
Moisture, %	74.66	75.45 ^b	74.72	73.49 ^a	0.45	*
Fat, %	5.01 ^b	3.03 ^a	3.61 ^a	4.88 ^b	0.4	**
Protein, %	19.42 ^a	20.45 ^b	20.63 ^b	20.47 ^b	0.3	*
WBSF	2.85 ^c	1.87 ^a	2.45 ^b	4.50 ^d	0.1	***
Hardness	3.06 ^a	3.29 ^a	3.71 ^{ab}	4.14 ^b	0.24	*
Cohesiveness	0.10 ^a	0.09 ^a	0.14 ^b	0.30 ^c	0.01	***
Elasticity	7.75 ^b	6.67 ^a	7.90 ^c	8.01 ^c	0.05	***
Gumminess	0.42 ^b	0.29 ^a	0.47 ^b	0.92 ^c	0.02	***
Chewiness	3.23 ^b	1.95 ^a	3.79 ^b	7.43 ^c	0.2	***

Principal component analysis for fatty acid composition of milk source (MMF, Maternal Milk Feeding; AMF, Artificial Milk Feeding; AMLF, Artificial Milk with *Lb. acidophilus*; AMBF, Artificial Milk supplemented with a mix of *B. longum* and *B. lactis*) and lamb meat (■ MM; ▲ AM; - AML; o AMB)

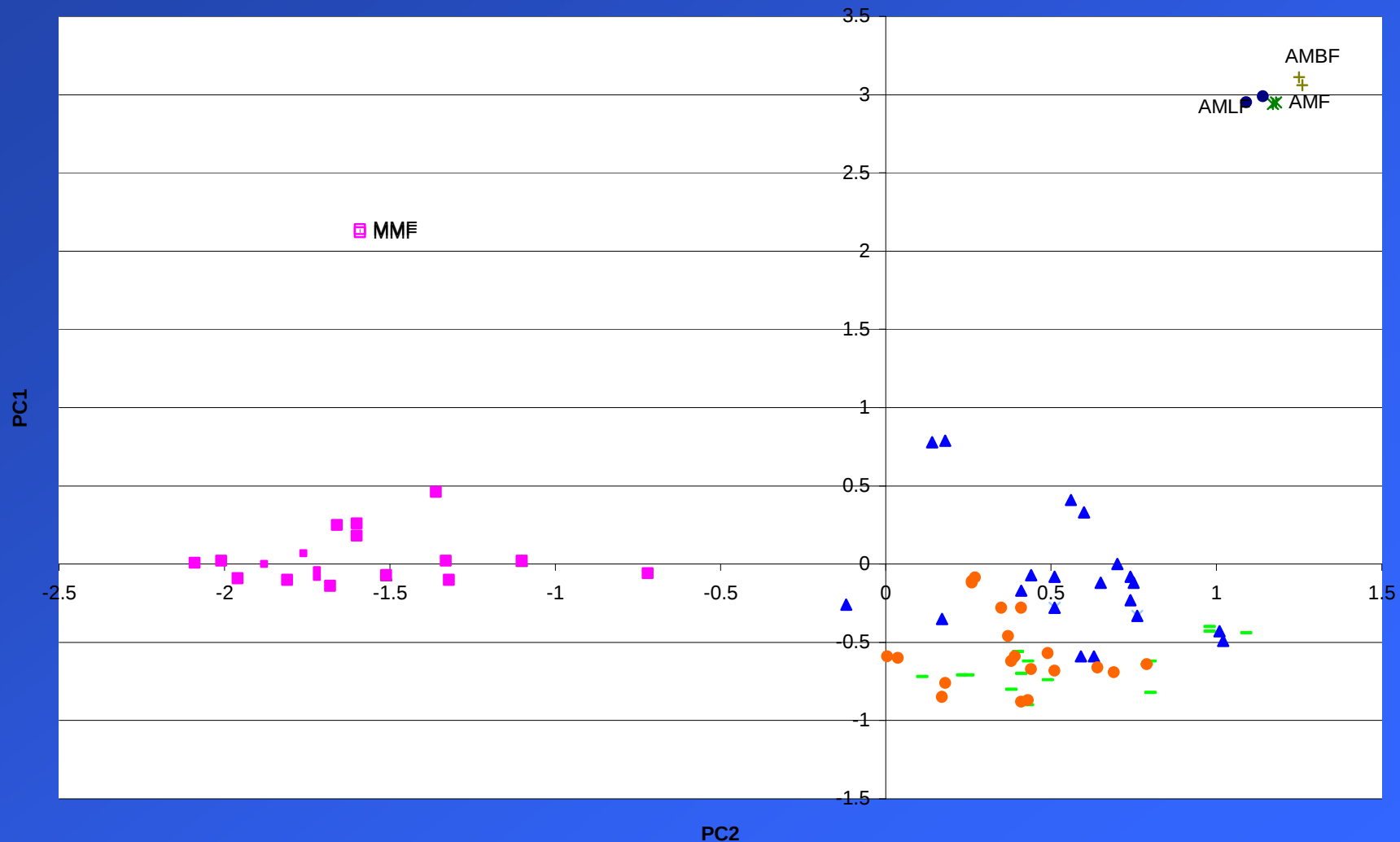


Table 2. Effect of feeding regime on fatty acids profile of lambs meat

Item	Feeding regime ¹				SEM	Effect, P
	MM	AM	AML	AMB		
C14	7.82 ^b	4.66 ^a	4.15 ^a	4.62 ^a	0.15	0.001
C16	26.4 ^b	23.02 ^a	23.1 ^a	23.7 ^a	0.3	0.001
C16:1	0.71 ^a	1.61 ^b	1.87 ^{bc}	2.04 ^c	0.08	0.001
C18:0	13.1 ^c	10.4 ^b	9.9 ^a	9.6 ^a	0.15	0.001
C18:1-11†	1.59 ^a	4.92 ^b	4.26 ^b	4.21 ^b	0.2	0.001
C18:2	8.01 ^a	12.54 ^{bc}	12.83 ^c	11.36 ^b	0.4	0.001
C18:3-n6	0.16 ^{bc}	0.15 ^b	0.19 ^c	0.09 ^a	0.01	0.001
C18:3-n3	0.22	0.24	0.18	0.19	0.03	NS
CLA-9c,11†	0.42 ^a	0.45 ^a	0.56 ^b	0.56 ^b	0.02	0.001
CLA-10,†12c	0.08 ^a	0.17 ^b	0.19 ^{bc}	0.24 ^c	0.02	0.001
C20:5-n3	0.67 ^b	0.13 ^a	0.13 ^a	0.11 ^a	0.03	0.001
C22:6-n3	0.64 ^b	0.13 ^a	0.14 ^a	0.09 ^a	0.03	0.001

IN CONCLUSION

Feeding regime of lambs influenced composition and rheological properties of meat.

Meat from artificially reared lambs evidenced an improved fatty acid profile for human diet.



EAAP 2010

61st Annual Meeting of the European Association
for Animal Production

AUGUST 23rd-27th, 2010 - HERAKLION, CRETE ISLAND, GREECE



Thank you for your attention