EFFECT OF DIET SUPPLEMENTED n-3 FATTY ACID ON GOAT MILK COMPOSITION AND SOMATIC CELL COUNT

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Introduction

Small ruminant **mastitis** is generally a chronic and contagious infection

somatic cell count (SCC) represents a valuable tool for its assessment

Prevention:

is mostly based on sanitation control and milking technique optimization

Exist some diet effect on prevention?

It has been proven that n-3 unsaturated fatty acids can reduce the severity of **inflammatory injury** by altering the availability of arachidonic acid in tissue phospholipids (by human)

(reported by Connor W.E. et all. 2000)

(reported by Gadek J.E 1999)

and few other research studies

Exist some diet effect on prevention?

Palombo J.D. et all. 1999.

(Effect of short–term enteral feeding with eicosapentaenoic and γ-linoleic acid on alveolar macrophage eicosanoid synthesis and bactericidal function in rats

MEASUREMENTS AND MILK SAMPLES

EXPERIMENTAL

The study was conducted on an Alpine farm on 62 Alpine breed goats 51 kg (±6 kg) body weight, 4 to 20 weeks following parturition.

The goats were machine-milked twice daily, at 6 a.m. and at 6 p.m.

Adoption period 10 days:

day 10 animals were randomly computer allocated into 4 groups:

Group1 - EPA: (15 animals) supplement of EPA (Pronova Biocare, Norway) - 5 days 20 g/day

Group 2 - ALA: (15 animals) supplement of ALA (A.C.E.F. Lex) - 5 days 20 g/day

Group 3 - DHA: (15 animals)) supplement of DHA (Nippon Chemical Feed Co) 5 days 20 g/day

Group 4 - CONTROL: (17 animals) no supplement.

n-3 unsaturated fatty acids were supplemented through a tube which was introduced into esophagus every morning milking during five days.

MEASUREMENTS AND MILK SAMPLES

Goats were milked twice daily;

Milk yield was measured by each milking

Two samples -70 ml and 3ml of milk were taken

Day 1 to day 10 adaptation period

Day 11-15 n-3 (ALA, EPA, DHA supplemented

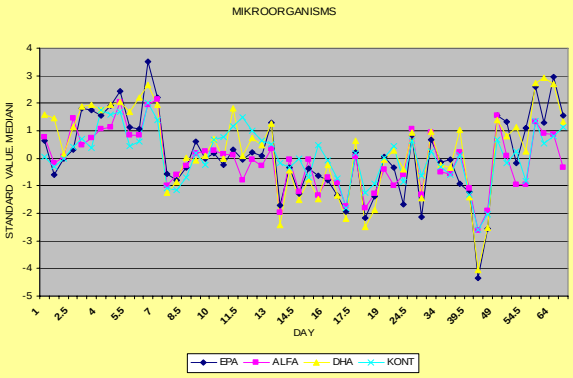
(5 days of its supplementation)

5 days after supplementation each milking were measured and samples were taken

Further each 5 day until day 70 were measured by each milking

EXPERIMENT PERIODE day 1 to day 70			
Period 1 Adapt.	Period 2 n-3	Period 3 Day 16 to day 20 contin. and after day 21 to day 70	
			Measurement each 5 day

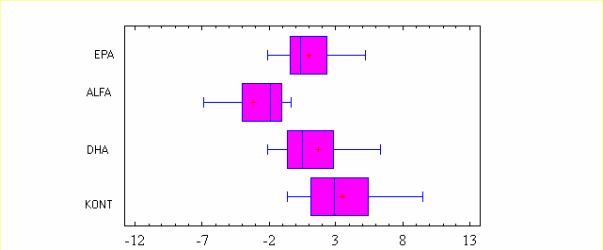
Standardization value of median for the number of microorganism in different groups



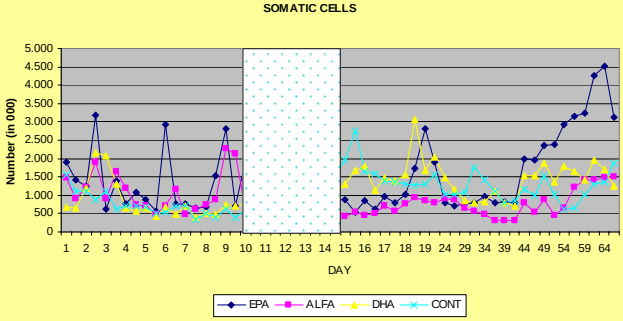
Value of SCC in different group

Group -	EPA	ALFA	DHA	CONT
SCC (x10^3) in the adaptation period (Period 1)	1316 ^{a}	1095 ^{a}	585 ^{b}	526 ^{b}
SCC (x10) the period of supplementation (Period 2)	1631 ^{a}	975 ^{b}	1166 ^{a}	1258 ^{a}
SCC (x10) after supplementation (Period 3)	1531 ^{a}	915 ^{b}	1884 ^{a}	1364 ^{a}

Value of SCC in different groups



Value of SCC in different period



Exist some diet effect on prevention SSC

The experiment of supplementation of ALA of high dose and of short duration in intervals of 30 to 40 days should be carried out to test if this is an appropriate and economic method to reduce SCC in goat milk.

This might also be of special interest for those, who raise goats on pasture, because ALA is the only n-3 unsaturated fatty acid of non-maritime plant origin

It can be found in fresh pasture and seeds and it would be interesting to see the difference in SCC among animals indoor or on pasture fostering

Exist some diet effect on prevention?

No effect on microorganisms
No effect on milk yield
Low effect on milk composition (EPA and DHA)
Effect on SSC- decreasing 40 days after supplementation (ALA)

(Some more research are needed?)

Thank you