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EFFECT OF RAW AND EXTRUDED SOYBEANS ON FATTY ACID PROFILE AND CLA OF SHEEP MILK

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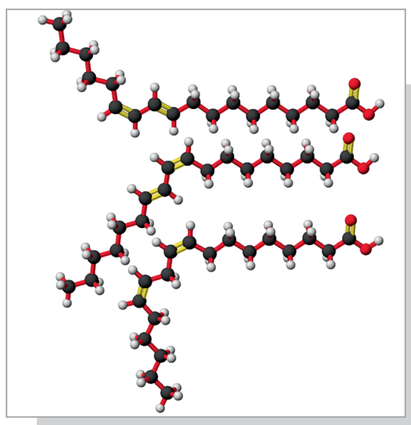
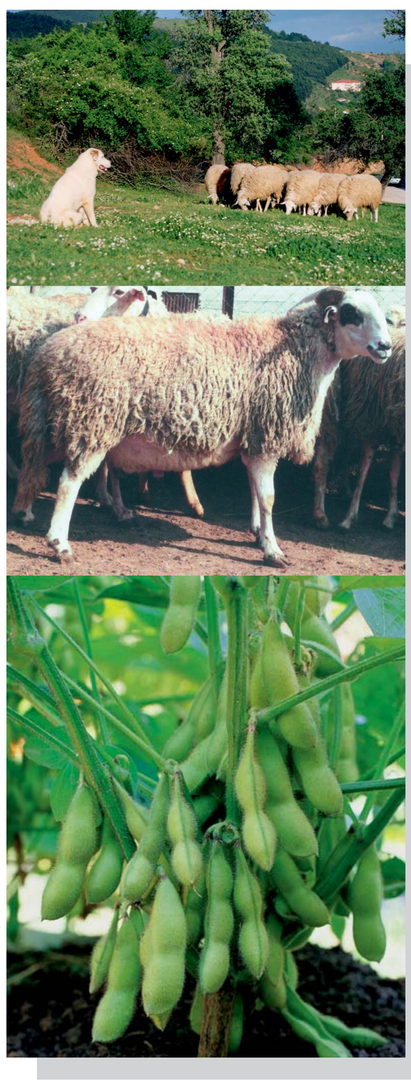




INTRODUCTION

It is believed by many researchers that a significant number of serious diseases like some cancers, diabetes type II and atherosclerosis are due, among other things, to human nutrition, particularly when the diet is based on foods rich in saturated fatty acids such as Lauric 12:0, Myristic 14:0 and Palmitic 16:0. Some, however, fats rich in polyunsaturated fatty acids , such as CLAs, n-3, n-6, EPA and DHA have beneficial effects on vital functions of the body of animals and humans.

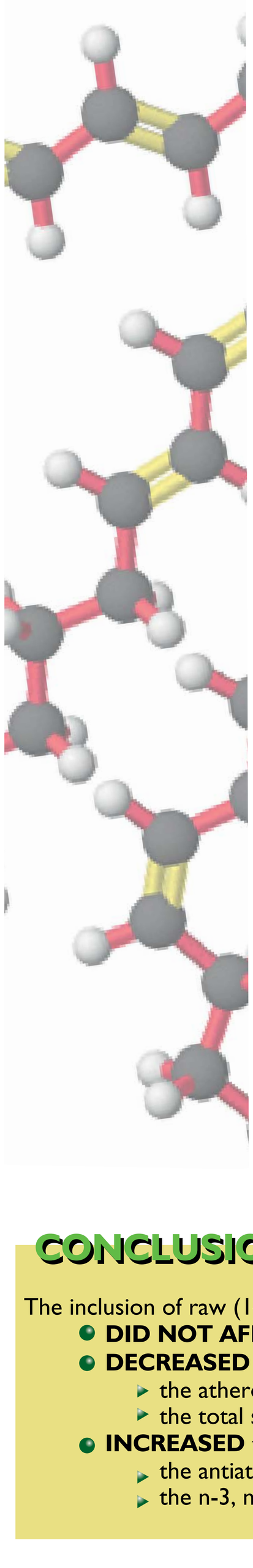
OBJECTIVE

To investigate the effects of dietary raw (RSB) or extruded (ESB) full fat soybean seeds on:

- Milk yield, milk composition and
- Fatty acid composition, conjugated linoleic acid and other desirable and undesirable fatty acids.

EXPERIMENTAL DESIGN

24 ewes of the mountain native greek breed assigned into 3 treatments according to a complete randomized design fed 3 isonitrogenous diets A (control), B (14% RSB) and C (14% ESB).



RESULTS

The effect of raw and extruded soybeans on milk yield and milk composition

Item	A (Control)	B (14% RSB)	C (14% ESB)	SEM	(P<)
Intake, DM(Kg/d)	1,85	1,95	1,91		
BW, kg	55,40	56,30	58,10	12,00	0,82
Milk yield, ml/d	662,00	717,00	681,00	119,00	0,72
Milk fat, %	6,49	7,48	6,84	0,33	0,13
Milk fat, g/d	42,70	52,90	46,40	7,90	0,42
Protein, %	6,03	5,78	5,63	0,36	0,22
Protein, g/d	39,20	40,80	38,60	6,10	0,54
Lactose, %	4,53	4,52	4,32	0,16	0,60
Lactose, g/d	30,10	32,70	29,60	5,70	0,75
SNF, %	11,63	11,38	11,04	0,19	0,11
SNF, g/d	76,50	81,30	75,50	13,00	0,65
FCM, ml/d	706,00	841,00	751,00	109,00	0,46
ECM, ml/d	625,00	710,00	654,00	108,00	0,54

The effect of raw and extruded soybeans on fatty acid composition (mg/g) of ovine milk fat

Item	A (Control)	B (14% RSB)	C (14% ESB)	SEM	(P<)
12:0 Lauric	64,8[a]	42,60[b]	50,60[b]	3,65	0,01
14:0 Myristic	125,20[a]	97,10[b]	104,60[b]	3,35	0,01
16:0 Palmitic	248,80[a]	215,90[b]	222,00[b]	5,72	0,01
18:0 Stearic	62,30[a]	109,40[b]	79,30[c]	4,16	0,01
18:1n11t (TVA)	33,00[a]	58,20[b]	46,80[b]	3,81	0,05
18:1n9c Oleic	124,30[a]	170,90[b]	155,00[b]	4,27	0,01
18:2n6c Linoleic	17,30[a]	30,20[b]	29,30[b]	1,25	0,01
18:3n3 Linolenic	4,00	5,00	4,70	0,26	0,06
CLA (c-9, t-11)	4,30[a]	7,40[b]	14,10[c]	1,51	0,05
CLA (t-10, c-12)	0,05	0,02	0,05	0,01	0,07
CLA (c-9, c-11)	0,03[a]	0,04[a]	0,04[b]	0,01	0,05
20:4n6c Arachidonic	1,60	1,60	1,70	0,06	0,07
20:5n3 (EPA)	0,40	0,30	0,30	0,02	0,08
22:6n3 (DHA)	0,30[a]	0,40[b]	0,40[b]	0,03	0,03
Others	313,62	260,95	291,11		

[a,b,c] Means with unlike superscripts within a row differ according to value indicated

The effect of raw and extruded soybeans on fatty acid composition (mg/g) of ovine milk fat

	A (Control)	B (14% RSB)	C (14% ESB)	SEM	(P<)
MUFA	189,90[a]	261,90[b]	242,20[b]	7,54	0,01
PUFA	32,84[a]	52,88[b]	57,58[b]	2,49	0,01
CLAs	4,33[a]	7,49[a]	14,19[b]	1,51	0,05
n-6	22,69[a]	38,39[b]	36,59[b]	1,38	0,01
n-3	5,82[a]	7,00[b]	6,79[b]	0,32	0,03
Unsaturated	222,80[a]	314,70[b]	299,80[b]	9,25	0,01
Saturated	777,20[a]	685,30[b]	700,20[b]	9,25	0,01

[a,b] Means with unlike superscripts within a row differ according to value indicated

CONCLUSIONS:

The inclusion of raw (14% DM) or extruded (14% DM) soybeans in the diets of ewes:

- **DID NOT AFFECT** the yield and the chemical composition of milk
- **DECREASED** the proportions of
  - the atherogenic fatty acids Lauric C12:0, Myristic C14:0 and Palmitic C16:0 and
  - the total saturated fatty acids of milk
- **INCREASED** the proportions of
  - the antiatherogenic and antimutagenic fatty acids (TVA and CLA) and
  - the n-3, n-6, monounsaturated (MUFA), polyunsaturated (PUFA) and total unsaturated fatty acids of milk.