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MILK CHARACTERISTICS OF INDIGINEOUS HUNGARIAN TSIGAI SHEEP POPULATIONS

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INTRODUCTION

Two kinds of indigenous Tsigai sheep are bred in Hungary: the so-called Autochthonous and the Milking Tsigai. Several differences were observed among the various Tsigai populations earlier. In the present study the milk production characteristics were examined in order to determine differences among them.

MATERIALS AND METHODS

Two *Milking Tsigai* (O and L) and three *Autochthonous Tsigai* (S, Sz and D) populations were selected for this study, which were kept under similar production system and nutritional conditions. Milk samples were collected from them individually once in a month (morning and evening), and group samples were also taken once in a month (morning and evening) over the lactation period. Samples were examined in official laboratories.

RESULTS

Significant deviations were found in milk production among the Autochthonous and Milking Tsigai populations (*Table 1):* 45-68 litres versus 128-160 litres; P<0.001), and within the Autochthonous and also within the Milking Tsigai populations; as well as in the lactation length (74-113 versus 145-176 days; P<0.01).

Differences were also found among the studied populations in dry matter (14.79-20.69 %; P<0.01), in raw protein (4.24-6.56%; P<0.01), and in casein (3.08-5.04%; P<0.05) contents (*Figure 1*).

Significant differences were also found in the fatty acid composition (*Figure 2*).

The SFA (63.04-74.93%), MUFA (21.94-32.18%) and PUFA (3.16-5.18%) (*Figure 3; Figure 4; and Figure 5*) showed differences (P<0.05) among the Tsigai populations and within the Autochthonous and within the Milking Tsigai populations as well.

Differences were also observed among the studied Tsigai populations in the amino acid composition (*Figure 6* and *Figure 7*), especially in the case of glutamine (18.0-20.9%), proline (9.7-11.8%), asparagin (6.5-8.3%), while much smaller deviations were found in the case of other amino acids.

CONCLUSIONS

In our previous studies there were significant differences found in phenotypic and genetic traits among these Tsigai populations. According to our present results deviations among studied Tsigai sheep populations were also valid in milk composition.

Table 1: The average milk production traits of various Tsigai populations

Populations		Milking days	Total milk (liter)	Average daily milk (liter)	Fat %	Protein %	Fat free dry matter %	Density (g/cm3)	Freezing point (°C)
I. (S)	n	48	48	48	48	48	48	48	44
	average	85.70	44.64	0.50	6.74	6.29	12.24	1.040	-0.681
	st. dev.	59.10	35.89	0.18	0.74	0.48	0.65	0.004	0.023
II. (O)	n	74	74	74	74	74	74	74	74
	average	120.70	94.34	0.78	6.57	6.11	12.30	1.041	-0.662
	st. dev.	23.96	35.10	0.26	0.56	0.25	0.86	0.001	0.016
III. (Sz)	n	51	51	51	51	51	51	51	51
	average	114.40	137.03	1.21	6.38	6.48	12.63	1.043	-0.699
	st. dev.	33.25	48.69	0.33	0.66	0.37	0.47	0.003	0.030
IV. (D)	n	43	43	43	43	43	43	43	42
	average	120.10	65.59	0.55	6.25	6.02	11.89	1.039	-0.658
	st. dev.	22.73	29.43	0.22	0.71	0.37	0.46	0.002	0.023
V. (L)	n	29	29	29	29	29	29	29	29
	average	68.70	79.71	1.15	7.76	5.82	11.70	1.038	-0.629
	st. dev.	6.96	12.88	0.12	0.63	0.21	0.25	0.002	0.013

Figure 1. The protein composition in the milk of various Tsigai populations by serials of tests

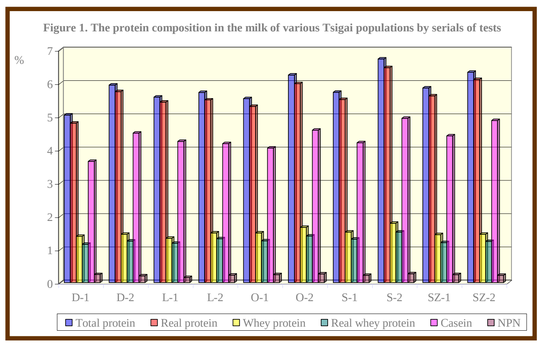

Figure 2. The SFA, MUFA and PUFA ration in the milkfat of various Tsigai populations by serials of tests

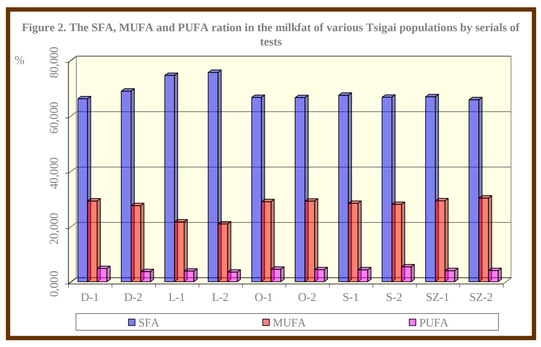

Figure 3. The SFA composition in the milkfat of various Tsigai populations by serials of test

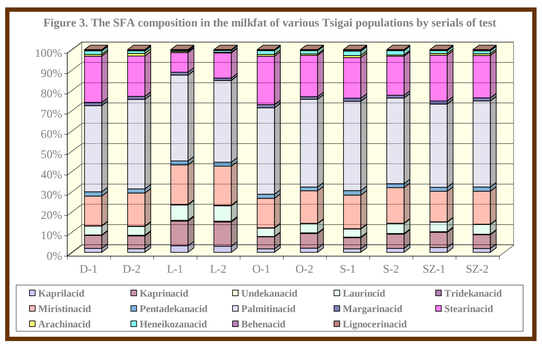

Figure 4. The MUFA composition in the milkfat of various Tsigai populations by serials of test

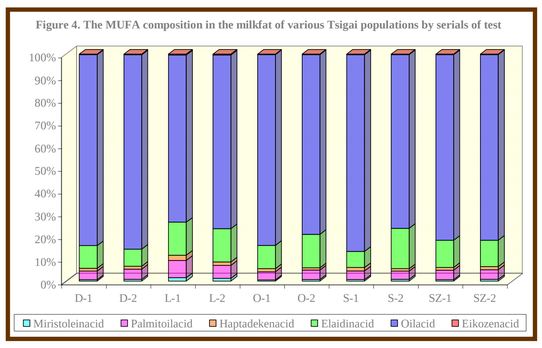

Figure 5. The PUFA composition in the milk of various Tsigai populations by serials of test

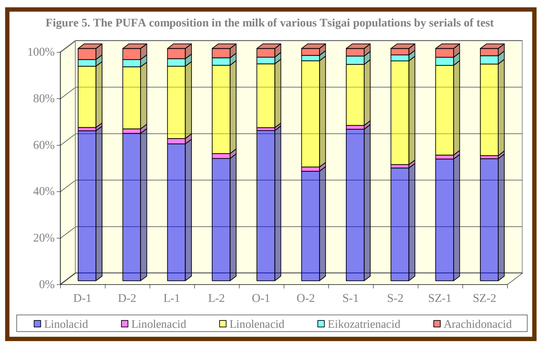

Figure 6. Essential amino acid content in the milk of various Tsigai populations by serials of test

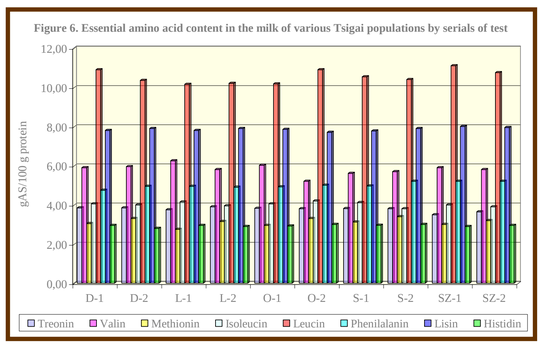

Figure 7. Non-essential amino acids in the milk of various Tsigai populations by serials of test