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AMINO-ACID COMPOSITION OF CAMEL'S MILK AND SHUBAT

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A comparative analysis of the amino-acid content of camel's milk and shubat from the Aral region and Kazakhstan was carried out. The particular amino-acid composition and different quantitative content were determined.

Key words: camel's milk, shubat.

Camel's milk and shubat, which is prepared from fermented camel's milk, have been widely used since antiquity in the diet of people in Africa, southern and western Kazakhstan, and republics of Central Asia. They are also used to cure certain ailments [1, 2].

Studies of the chemical composition of camel's milk (**1**) and shubat (**2**), in particular, the fatty-acid, protein, and amino-acid compositions, have been published [3-5]. A comparative analysis of the amino acids in camel's milk and shubat is needed considering that these preparations are used for medical purposes by tribes in the Khodzheilinskii region of Karakalpakia.

We investigated the overall amino-acid content in biopreprations of **1** and **2** from the Aral region with a view to recommending them as dietary additions and for prophylaxis and treatment of ailments typical of the ecologically unfavorable Aral regions.

The biological value of milk and shubat is determined to a large extent by their amino-acid compositions. We observed 18 amino acids (Table 1) in the protein hydrolysates of biopreparations of **1** and **2**.

It can be seen that camel's milk differs from shubat in a large overall amino-acid content. The exception is only lysine, the content of which in shubat is greater than in camel's milk. However, shubat contains more free amino acids than camel's milk [5], which increases its value as a more readily assimilated product.

Camel's milk from Kazakhstan contains more of certain essential amino acids such as isoleucine, phenylalanine, tryptophan, and lysine and less of others such as methionine, threonine, and valine than camel's milk from the Aral region. However, certain non-essential amino acids, e.g., aspargic acid, arginine, and tyrosine, are greater in milk from Kazakhstan. Glycine is present in identical amounts whereas glutamic acid and serine are comparatively less [4].

Thus, the overall amino-acid compositions of camel's milk from Kazakhstan and the Aral region are basically identical. However, they differ in quantitative content. This is apparently due to specifics of habitat.

EXPERIMENTAL

Fresh native camel's milk and shubat from regions of Karakalpakstan were investigated. The amino-acid composition was determined using HPLC and the literature method [6].

The chromatograph was a Beckman System Gold with integration on an IBM-286 using version 3.10 Gold software. The column was Ultrasphere C-18. Eluents were A [0.14M CH_3COONa and 0.05% $(C_2H_5)_3N$ (pH 6.4)] and B (50% CH_3CN in water) with a linear gradient of B and A from 2 to 80%. The detector operated at 254 nm with a sensitivity of 0.01. The standard was an amino-acid mixture (Sigma, USA).

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TABLE 1. Overall Amino-Acid Composition of **1** and **2**, %

Amino acid	1	2
Asp	13.28	12.35
Glu	11.36	10.45
Ser	2.81	2.62
Gly	4.99	4.53
Tyr	2.64	2.42
Ala	4.28	3.94
Pro	3.50	3.18
His	1.35	1.23
Arp	5.37	4.83
Val	4.03	3.63
Tyr	5.56	4.83
Met	1.39	1.22
Cys	3.92	3.62
Leu	8.56	7.82
Ile	6.94	5.31
Phe	3.86	3.55
Trp	1.92	1.78
Lys	5.15	5.79
Total:	90.95	86.31

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