

## Effects of camel milk and shubat on lactose-intolerant individuals

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### Abstract

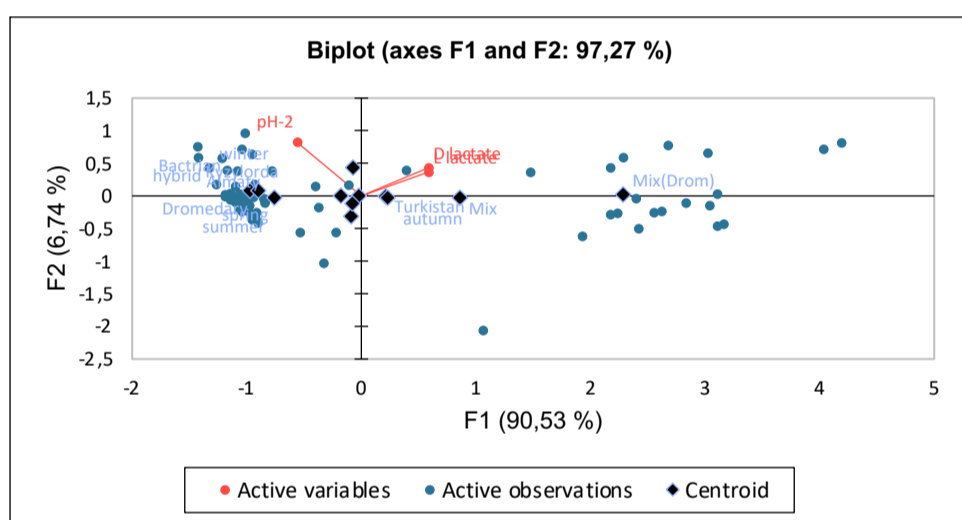
More research is needed to determine the easy digestibility of camel milk based products in people with lactose intolerance, especially since lactose intolerance is becoming more common among modern consumers. According to preliminary studies, the total lactate content in camel milk is comparable to cow's milk, but the amount of L-lactate in camel milk is 100 times greater than in cow's milk. This is most likely one of the factors that contribute to its easy digestibility.



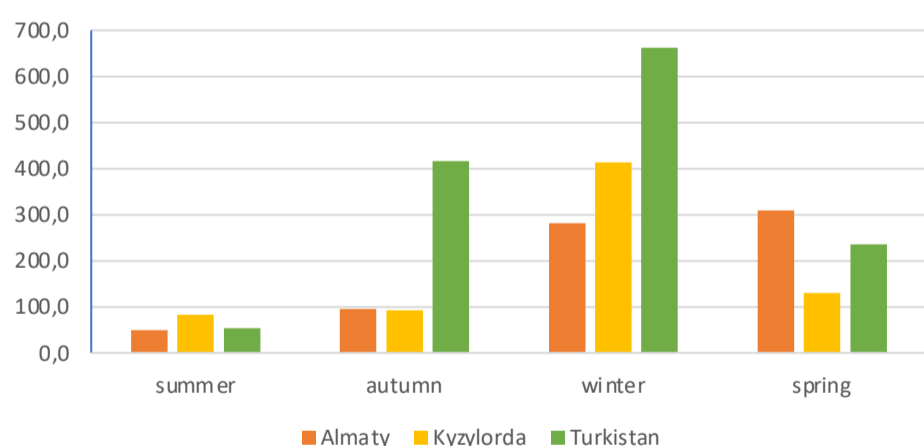
**Aim:** Assess the levels of D and L lactates in the milk and shubat (fermented camel milk) obtained from different camel breeds throughout three areas of Kazakhstan to explain the digestive compatibility of these dairy products in the human body, specifically in relation to the absence of lactose-intolerant symptoms.

### Methods

55 samples of camel milk and 20 samples of shubat from dromedaries, bactrians, and hybrids were obtained from six farms in three different regions (Almaty, Kyzylorda, Turkistan) of Kazakhstan during year. An enzymological method based on spectrophotometric NADH measurement was employed for quantitative analysis (test system NZYTECH, Portugal).



Ratio L/D in milk by season and region (%)



pH-1	1								
pH-2	0,415	1							
fat	0,362	0,104	1						
FFR	0,458	-0,108	0,716	1					
protein	0,478	-0,107	0,703	0,997	1				
density	0,433	-0,153	0,525	0,960	0,964	1			
D lactate	-0,316	-0,133	-0,115	-0,207	-0,203	-0,198	1		
L lactate	0,477	-0,007	0,341	0,401	0,390	0,361	-0,140	1	
Ratio L/D	0,520	0,107	0,391	0,510	0,495	0,472	-0,365	0,918	1
	pH-1	pH-2	fat	FFR	protein	density	D lactate	L lactate	Ratio L/D

### Results

A comparable proportion of D and L lactates can be found in Shubat. However, seasonality and geographic location have significant effects on milk ratios. There is a positive relationship between L lactate and both fat and protein content, as well as density. On the other hand, there is a negative correlation between D-lactate concentration and pH.

### Conclusion

The results of the study present an explanation for one of the potential reasons why camel milk is easier to digest than cow milk for individuals who are lactose intolerant. Because of its high L-lactate content, its beneficial effect is increased.

