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Preliminary approach to heat treatment traceability in donkey milk

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Statement of the Problem: Donkey milk is characterized by high lactose together with low protein amount, low casein (CN)/ whey protein (WP) ratio and high level of non-protein nitrogen (NPN) fraction. For this reasons it is the most similar to breast human milk and mare milk, although poor in lipid content and caloric value and so, inadequate as exclusive food in infants for the first year of life. Heat treatment represents an essential step for donkey milk commercialization, and heat treatment traceability had an important role in food control system.

Methodology & Theoretical Orientation: For the trial 270 milk samples were used, 70 donkey milk samples, 70 cows' milk samples and 70 ewe milk samples. All samples were treated at 72°C for 15 seconds, in continuos. After this, they were suddenly refrigerated at 4°C. Raw and heated milk of all species was analyzed for alkaline phosphatase and peroxidase activity. Enzyme activity was measured by spectrophotometric methods.

Findings: Raw cow milk showed mean ALP values of about 800×10^3 mU/L, ewe milk 1000×10^3 mU/L and donkey milk 6 $\times 10^3$ mU/L. After heat treatment cow and ewe ALP activity were lower than 300 mU/L. Differently, ALP activity in heated donkey milk decreased of the 10% if compared to raw milk, and remained on values of about 5,5 $\times 10^3$ mU/L.

Conclusion & Significance: The ALP and LPO activity in donkey milk is about 100 times lower than what reported for cow and ewe milk. However, although this enzyme was studied and resulted useful for heat treatment traceability in cow milk, it is not the same for donkey milk. In fact, it is partially inactivated and results at high levels of activity after heat treatment. Moreover, LPO activity resulted different from what observed for cow and ewe milk.

Biography

Pasquale Centoducati is a Full Professor of Animal Science at the Department of Veterinary Medicine of Bari University "A. Moro" (Italy). One of his main research topics in the last ten years has been the study of meat and milk production by equids (horses and donkeys). In particular, his researches focused on milk produced by these species, and on the possibility of marketing. The main aim of his research is the recognition of a good heating process for donkey milk and how to give the possibility of heat treatments.

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