

Antibodies from human milk hydrolyze microRNAs

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Milk is a unique biological fluid; it contains all components necessary for the development and protection of newborn. Milk is not just a mixture of such substances, as proteins, lipids, carbohydrates, nucleic acids. Of particular interest are milk immunoglobulins, possessing various catalytic activities, such as protease, phosphatase, DNase, RNase and others. In this work, the ability of milk IgG and sIgA to hydrolyze various RNA substrates was investigated.

MicroRNAs that regulate the expression of many genes are found in many biological fluids, including milk. It was shown that miRNAs regulate the expression of genes associated with the development of the newborn's immune system. Milk immunoglobulins possess RNase activity in the hydrolysis of various miRNA substrates, both highly expressed in milk and unrepresented in milk, as well as homooligoribonucleotides and cellular ribosomal RNA.

In addition, microRNA isolated from human skimmed milk and various fractions of milk: cell sediment, lipid fraction, and milk plasma were studied. Analysis of the isolated RNAs was performed using an Agilent 2100 Bioanalyzer on RNA 6000 Pico and Small RNA chips. Using reverse transcription with stem-loop primers and subsequent quantitative real-time PCR, the expression of 25 miRNAs in different fractions of milk was evaluated.

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