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miRNA-based biomarker for quality control of milk

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Scientists have identified a potential biomarker for establishing the quality of cow's milk. Research published this week in *Cell Research* shows that cow's milk contains a large number of microRNAs (miRNAs) and that the unique expression profiles of the milk-specific miRNAs may provide a new standard for the quality control of milk and milk products.

Chen-Yu Zhang and Ke Zen and colleagues have identified seven milk-specific miRNAs that are stably present in milk through all stages of lactation, from colostrum to mature milk. The researchers found that diluting milk led to the reduced expression of the seven miRNAs, mirroring a decrease in overall protein levels in the milk. However, when egg protein or soybean protein was added to the diluted milk to boost protein levels to those of raw milk the samples still showed reduced expression of the miRNAs. They had a similar result when they added melamine to diluted milk to increase the nitrogen levels back up to those of raw milk. Therefore, the expression profiles of the seven milk-specific miRNAs may represent ideal biomarkers for identifying poor-quality and/or commercially manipulated milk.

The need for stricter quality control tests for milk and milk products was brought to the worldwide stage recently when infant formula was found to be contaminated with melamine, used to boost protein levels in the which can lead to kidney problems when consumed regularly. This highlighted the ease with which the current markers that are used for assessing the quality of milk can be manipulated, thus making it difficult to monitor the raw milk content of infant formula and other milk products.

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