

New biomarker for raw milk quality detection

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Strict milk quality tests had drawn a national attention throughout China in the wake of the baby formula milk powder contamination incident. The individual classic markers for milk quality control, particularly protein concentration, are easy to be manipulated and it is difficult to use these markers to monitor the raw milk content in formula milk and various milk products. The findings, published this week in *Cell Research*, could lead to a completely new standard for milk quality control, and possible new milk products with specific usage in the future.

The research group, led by Drs. Chen-Yu Zhang and Ke Zen at Nanjing University School of Life Sciences, found that cow milk contains large amount of microRNAs (miRNAs), a 19-23nt in length non-coding RNA, and the unique expression profile of milk-specific miRNAs can serve as a novel indicator and possible new standard for the quality control of [raw milk](#) and milk-related commercial products, such as fluid milk and powdered formula milk. Through systematic analysis of milk miRNA in milk via Solexa sequencing and real time qRT-PCR, they found that miRNA profiling was different at various stage of lactation.

Compared to the previous finding by the same group that serum miRNAs serve as non-invasive fingerprint for cancer or other disease, the current study shows that cow milk contains milk-specific miRNAs and their concentrations are generally higher than those in serum.

Seven milk-enriched miRNAs have been selected and their levels are proportionally correlated to the content of raw milk. "Compared to

traditional indicator for milk", said by Professor Zhang, "milk miRNA-based biomarker provides much more accurate tool for milk quality control because this [biomarker](#) contains multiple miRNAs, and these miRNAs actually reflect the various property of milk".

Besides serving as new indicator for milk content, finding functional miRNAs in milk may also change our understanding of nutrient in milk-related product. Added by Professor Ke Zen, "if we can identify the biological function of various miRNA in milk, by removing or adding certain miRNA, we may generate new [milk products](#) specialized for certain people groups".

More information: "Identification and characterisation of microRNAs in raw milk during different periods of lactation, commercial fluid, and powdered milk products" Publishing on Cell Research, June 15, 2010.

Provided by Nanjing University School of Life Sciences

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