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Paper Title:	Fabrication of Microfluidic Chip for Somatic Cell Separation
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Abstract

Mastitis in dairy cows, a significant issue in the dairy industry, is primarily diagnosed by measuring the somatic cell count (SCC) in milk. Traditional methods for SCC detection, such as direct microscopic examination and automated cell counters, are either time-consuming or costly. To address this, we developed a microfluidic chip designed to separate and concentrate somatic cells from raw milk using inertial microfluidics within a spiral microchannel. The chip was fabricated with a rectangular cross-section channel and tested for its efficacy in separating somatic cells. The device achieved a separation efficiency of 60.13% and demonstrated an accuracy of 89.72% when compared with standard methods. These results indicate the potential of this microfluidic chip as a cost-effective and efficient tool for early detection and monitoring of mastitis in dairy cows.