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A study on contaminant bacteria of liquid cow milk at processor level in Sri Lanka

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The shelf life of the processed liquid milk of Sri Lanka claimed to be shorter. This is mainly due to the microbial contamination throughout the milk processing chain. The initial microbial flora of raw milk reflects the conditions during production, collection, handling and further influenced by the transport and storage conditions. Total viable count reflects the total microbial flora of the milk while analysis for specific group of microorganisms such as the coliform, psychrotrophic and sporeformer counts reflect transport and storage conditions. Growth of most bacteria could be restrained by maintaining the milk temperature below 4 °C throughout the process. However, in Sri Lanka there is a major difficulty in achieving these conditions, due to the tropical climate and lack of necessary chilling facilities. Therefore, the major objective of this investigation was to enumerate the different groups of contaminant microbes at different points of liquid milk processing in local milk plants. Raw, pasteurised and pasteurised and packaged milk samples were collected from three major processing factories (A, B, C) and raw milk samples were colleted from two producers (D,E) to enumerate the total viable count (TVC), coliform count (CC), psychrotropic count (PSC). Samples were brought under chilled conditions to Dairy Technology Laboratory at University of Peradeniya. Sample analysis was carried out according to methods described by the British Standard Institute. The results of the tabulated microbial counts are in the table below.

Location	Sample	TVC(cfu/mL)	CC(cfu/mL)	PSC(cfu/mL)
A	Raw milk	$97(\pm21)\ x10^7$	$75(\pm16)\ x10^6$	$69(\pm6)\ x10^6$
	Pasteurized (p) milk	$84(\pm22)\ x10^4$	$25(\pm12)\ x10^4$	$107(\pm36)\ x10^4$
	P. Packaged milk	$103(\pm23)\ x10^5$	$166(\pm33)x10^3$	$82(\pm23)\ x10^4$
B	Raw milk	$56(\pm5)\ x10^7$	$11(\pm5)\ x10^5$	$84(\pm24)\ x10^5$
	Pasteurized (p) milk	$87(\pm17)x10^4$	$68(\pm14)\ x10^4$	$59(\pm19)\ x10^4$
	P. Packaged milk	$51(\pm8)\ x\ 10^5$	$48(\pm12)x\ 10^3$	$56(\pm9)\ x\ 10^4$
C	Raw milk	$102(\pm30)\ x10^6$	$101(\pm46)x10^6$	$45(\pm1)\ x10^6$
	Pasteurized (p) milk	$122(\pm25)\ x10^3$	<15 cfu/mL	$82(\pm9)\ x10^3$
D	Raw milk	$10(\pm3)\ x10^6$	$91(\pm20)\ x10^6$	$12(\pm4)\ x10^6$
E	Raw milk	$92(\pm24)\ x10^6$	$54(\pm10)\ x10^5$	$70(\pm28)x10^5$

These results indicate a major failure in maintaining the hygienic conditions and cold chain throughout the collection, transport and processing channel. Therefore, remedial action should be taken to improve the quality of raw and processed milk in order to supply assured milk product to consumers.

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