

## Effect of addition of low levels of CO<sub>2</sub> on keeping quality of chilled raw milk under Sri Lankan conditions

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A study was undertaken to find out the effect of addition of low levels of CO<sub>2</sub> on keeping quality of chilled raw milk.

Raw milk obtained from university farm was chilled and treated with four levels of CO<sub>2</sub> gas (0, 7, 15, 18.5 mM). The mentioned CO<sub>2</sub> levels were measured using a gas chromatograph set. Viable Plate Count (VPC), psychrotrophic count and coliform count were obtained daily according to the standard microbiological procedures up to five days of storage period at 4 °C. SAS computer package was used for the analysis of the data.

A significant ( $p < 0.05$ ) day x CO<sub>2</sub> interaction was observed for VPC of raw milk. Up to 3<sup>rd</sup> day of storage, VPC was not significantly different at each level of CO<sub>2</sub> administered. However on 4<sup>th</sup> and 5<sup>th</sup> day, VPC was significantly ( $p < 0.05$ ) low at 15 and 18.5 mM CO<sub>2</sub> level than 0 and 7 mM CO<sub>2</sub> levels. Therefore addition of high levels of CO<sub>2</sub> at 15mM and above could reduce the bacterial growth than when use lower levels of CO<sub>2</sub> into chilled raw milk and thus increasing the keeping quality. Psychrotrophic bacterial count was significantly decreased with the increase of CO<sub>2</sub> level except on 2<sup>nd</sup> day of storage period. However, on 2<sup>nd</sup> day too, there was a reduction of psychrotrophs with increase of CO<sub>2</sub> levels except at 15 mM concentration. Psychrotrophic bacterial count increased significantly ( $p < 0.05$ ) with the storage period except at 18.5 mM CO<sub>2</sub> concentration.

Significant differences were not observed in coliforms at any level of dissolved CO<sub>2</sub> concentration, on each day of storage period except at 18.5mM of CO<sub>2</sub> concentration. Therefore, according to the present study, dissolved CO<sub>2</sub> concentrations of 0, 7 and 15mM had no effect for the number of coliforms of raw milk at 4°C storage over five days. However, at 18.5 mM dissolved CO<sub>2</sub> concentration a significant ( $p < 0.05$ ) reduction of coliforms was observed with the storage period. Therefore, these findings strongly indicate that higher levels of dissolved CO<sub>2</sub> concentrations can be used to reduce the coliforms in chilled raw milk.

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