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Time Temperature Indicator for Monitoring Freshness of Packed Pasteurized Milk

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Abstract : Time Temperature Indicator's (TTI) are trending approach in a food packaging that will be insightful to have safe and hygienic food products. Currently, available TTI in the market are mostly a product specific and sometime even difficult to handle especially in supply chain as these are pre-activated and require specific storage conditions. In the present study, research focus is on the development of a cost-effective lactic acid based TTI that can work over a wide range of temperature and can be activated at time of packaging or on demand. The correlation between activation energies of colour change of the developed indicator and packed pasteurized milk spoilage with respect to time and temperature was established. Developed lactic acid based TTI strips have range of activation energy from 10.13 to 24.20 KJ/mol. We found that the developed TTI strip's with activation energy 12.42, and 14.41KJ/mol can be correlated with spoilage activation energy of packed pasteurized milk which was 25.71 KJ/mol with factor of 2 at storage temperature 4°C. The implementation of these TTI on packed pasteurized milk allow us see visual colour change during the storage and can be fruitful to monitoring quality of the milk and understand its freshness especially in a cold supply chain, viz distributor and road vendor etc.

Keywords : pasteurised packed milk, time temperature indicator, spoilage, freshness
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