

**NITROGEN GAS FLUSHING TECHNOLOGY TO MINIMIZE
GROWTH OF PSYCHROTROPHS IN RAW AND
PASTEURIZED MILKS DURING COLD STORAGE**

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Following milking, fresh raw milk contains various microbes, originating from numerous sources like the teat canal epithelium and from outside the udder, as environmental contaminants. Low pasteurization of bovine raw milk (typically 72°C for 15 sec or slightly more) is widely used to eliminate the possible presence of human pathogens and to reduce the levels of total alive microbial cells typically by 1.5 to 3 log-units in order to warrant the safety and to extend the shelf life of pasteurized milk without affecting severely milk's sensory and technology properties. However, being non-sterile materials, both raw and pasteurized milks need to be cold stored (at 6°C or less, but more than 0°C). Unfortunately, psychrotrophic bacteria are able to grow even in the cold chain conditions, and consequently limit the practical storage times of both raw milks and pasteurized milks as acceptable food materials. Our group has investigated the efficiencies and specificities of a pure nitrogen gas (N₂) flushing treatment applied to an open system: N₂ gas flows through the head space of the milk containing vessel. Based on our laboratory scale results the growth of both pseudomonads and *Bacillus weihenstephanensis*, some major spoilage psychrotrophs of raw and pasteurized milks, respectively, could be effectively inhibited, and in particular cases even eliminated by the N₂ flushing treatment. In addition no bacterial groups, like anaerobes or spore-formers, have been found to be favored under this treatment. The most recent research results will be described in more detail, and the further research topics will be discussed.

Keywords: Biosensor technologies, milk, N₂ flushing treatment

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