

A new High Hydrostatic Pressure destroyed all pathogens including spores while preserving the Bioactive proteins of Donated Human Milk

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Background: The main process used to pasteurize human milk is the low-temperature, long-time Holder method (HOLDER and recently investigated, the high-temperature, short-time method. Both processes lead to an appropriated inactivation of vegetative forms but are ineffective versus the bacterial spores.

Research Aims/Questions : Find a method accomplish two main objectives: inactivation of all pathogens, including spores, and preservation of the activity of milk components.

Design/Methods: Recently, a novel approach of the High Hydrostatic Pressure processes have been developed by HPBioTECH. We compared the effect of Human Milk treatment on the same samples (raw Human milk, Holder and our novel High Hydrostatic Pressure) on vegetative and spores forms of pathogens and on bioactive components (Lipase activity, Immunes proteins).

Results: a) Pathogens destructions: two main microbial strains have been selected: *Staphylococcus aureus* (as reference for the vegetative forms) and *Bacillus cereus* (as reference for spores). This research led process adapted to the a) microbial decontamination of 6 log., either for *Staphylococcus aureus* or *Bacillus cereus*, b) Human Milk bioactive components: the main components of human milk is preserved. Activity of the lipase after this treatment (close to 80%) and that of several additional components (α -lactalbumin: 96-99%; Casein: 98-100%, Lysozyme :95-100%; lactoferrin: 93-97%; sIgA: 63-64%).

Conclusions: this novel high Hydrostatic process generate microbiologically safe human milk could potentially result in important benefits for preterm infants: (i) improved assimilation of human milk, leading to daily weight and (ii) improved resistance to infections(iii) to avoid discarding 10% of contaminated by *Bacillus Cereus* human milk collected.