

## Optimizing Donor Milk Quality for Preterm Infants

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Donor human milk is the best alternative when mothers' own milk is not available for the preterm infant because it contains nutritional, bioactive, protective and developmental components that cannot be found in infant formula. However, to prevent the potential risk for the transmission of pathogens from donor mothers to preterm infants, the donor milk is pasteurized. Holder pasteurization is widely used in milk banks. Human milk is heated in a water bath and held at 62.5°C for 30 minutes. This treatment is capable of reducing common bacteria found in human milk including *E. coli*, *S. epidermidis*, *E. cloacae*, *B. cereus* and *S. aureus* by a factor of 105. However, bioactive proteins are only partially preserved during this process. For example, 72% of sIgA, 22% of lactoferrin and 39% of lysozyme were retained after Holder pasteurization. Furthermore, the retention of bile salt stimulated lipase (BSSL) was less than 1%. BSSL is a very heat labile enzyme and depending on exposure time the inactivation starts at 45°C which is well below Holder pasteurization temperature. It is likely that the inactivation of BSSL through the Holder pasteurization process is responsible for the lower growth rates of preterm infants fed pasteurized donor human milk compared to preterm infants fed mothers' own milk. Pasteurization technologies other than thermal are emerging in the food industry to preserve the sensory, nutritional and functional properties of foods. Research indicates that alternative pasteurization methods applied to human milk could prevent excessive loss of bioactive components whilst maintaining the same reduction of bacteria viability as Holder pasteurization. This presentation will explore the potential of alternative pasteurization methods to improve the quality of donor human milk for preterm infants.

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Lukas Christen successfully completed a Medical Engineering degree and worked several years in an engineering company for medical devices in Switzerland. In 2008 he joined the Human Lactation Research Group at the University of Western Australia for an occupational traineeship as a Research Fellow. He is now studying for his PhD in this group under the supervision of Professor Peter Hartmann. His research focuses on optimizing the quality of donor human milk for preterm infants