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High hydrostatic pressure treatment must insure the pathogens safety of human milk Including *Bacillus cereus* and the preservation of bioactive proteins particularly lipase and immune proteins

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Breast milk is the nutritional reference for the child and especially for the preterm infant. Breast milk is better than donated breast milk (DHM), but if breast milk is not available, DHM is distributed by the Human Milk Bank (HMB). Raw Human Milk is better than HMB milk, but it may contain dangerous germs and it is usually milk pasteurized by a Holder treatment (62.5 °C 30 min). However, Holder does not destroy all germs and in particular in 7 to 14%, the spores of *Bacillus cereus* are found, and it also destroys the microbiota, lipase BSSL and immune proteins. Another technique Short Time High Temperature (STHT 72 °C, 5-15 s) has been tried, which is imperfect, does not destroy *Bacillus cereus* but degrades the lipase and partially the immune proteins. Therefore, techniques that do not treat by temperature have been proposed. For more than 25 years, high hydrostatic pressure has been tried with pressures from 100 to 800 MPa. Pressures above 400 MPa can alter the immune proteins without destroying the *Bacillus cereus*. We propose a High Hydrostatic Pressure (HHP) with 4 pressure cycles ranging from 50-150 MPa to promote *Bacillus cereus* germination and a 350 MPa Pressure that destroys 106 *Bacillus Cereus* and retains 80-100% of Lipase, Lysozyme Lactoferrin and 64% of sIgA. Other HHP techniques are being tested. We propose a literature review of these techniques.

Speaker Biography

Claude Billeaud received his MD degree from the Medical University of Bordeaux (France) in 1979 after a graduation in Human Cytogenetics (1976). He then studied pediatrics and has been the Clinical Assistant Director of Bordeaux University in the Departments of Pediatrics, Neonatology and Intensive Care since 1983. He currently serves as a pediatrician in the neonatal unit at the Children's Hospital of Bordeaux, as a scientific manager of Bordeaux-Marmande human milk bank, as a lecturer and head of research (HDR : Habilitation to direct research) in neonatal nutrition at the Medical University of Bordeaux. His particular interest in research led him to graduate in Biology and Health (1988, Bordeaux), be awarded a master in statistics applied to clinical research (1991, Montreal) and complete a PhD in Nutrition and Food Science (2000, Bordeaux). Along his career he has often been invited as a guest professor specialised in nutrition and neonatology in various universities abroad (Montreal, Corrientes in Argentina). Over the last 35 years, he has been an active member of different scientific organisations, French, European or American, specialised in perinatal medicine (neonatology, pediatrics and nutrition). In this instance, he has served as the President of the Association for Pediatric Education in Europe (A.P.E.E) since 2008 and behalf APEE he is Member of European Academy of Paediatrics (EAP). He has also been very involved in the French human milk banking association (ADLF) for more than 10 years, sharing his academic knowledge focused in nutrition and his long clinical experience in neonatology. He is currently carrying out several researches on the composition of human milk. As an expert in nutrition and perinatal medicine, he is also the author and co-author of numerous scientific publications.

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