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High hydrostatic pressure effect associated with the disinfectants for the inactivation of pathogenic bacteria

Marriam Yamin
State University of Campinas, Brazil

In the hospital environment, the pathogenic bacteria are highly resistant, often causing infections in immunocompromised patients, as well as infections from surgeries, in part due to the inefficiency of sterilization of some medical surgical materials and biopharmaceutical solutions. There is a great concern for efficiently sterilize these materials, so the use of an alternative technique called as high hydrostatic pressure (HHP) to inactivate microorganisms could be very effective, especially for the sterilization of temperature sensitive materials. Although the mechanisms of inactivation of microorganisms involved are not yet well established, there is indication that significant damage occurs in the cell wall, ribosomes, cellular content and plasma membrane. In this study, we aimed to use high hydrostatic pressure treatment separate and in combination with disinfectant (Glutaraldehyde) in low concentration and moderate temperature to check the synergistic effect for the sterilization of materials from different pathogenic bacteria. After treatment, we observed that even though for some bacterial strains high pressure did not able to give significant inactivation individually but in combination with glutaraldehyde at 45 °C temperature, it gives total inactivation of all bacterial strains. Thus, these results shows that this technique will be of great interest for the molecular biology and genetics based analysis of bacterial classification and off course the quality control including safe sterilization of the medical and biopharmaceutical materials.

Biography

Marriam Yamin is currently a PhD student in the Department of Biochemistry, State University of Campinas, Sao Paulo, Brazil. She has completed her Masters in Microbiology in year 2012, from University of Karachi, Pakistan. She also has work experience as Research Associate in Agha Khan University.

marriam.khalid@yahoo.com
marryamyameen@yahoo.com

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