Study on Sterilization of Spores Contained in Honey by using Instantaneous High Pressure

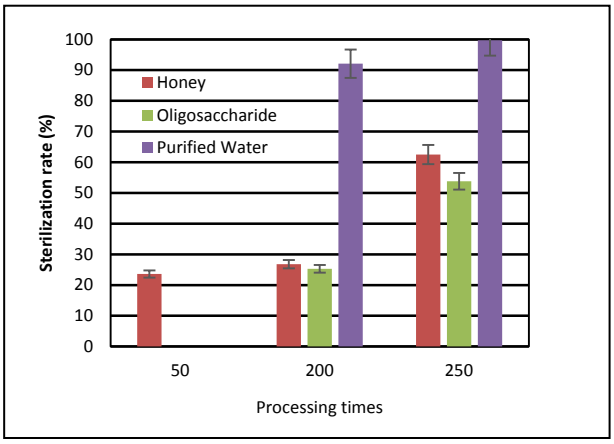
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Abstract

When infants under 1 year old ingest botulinum spores contained in honey, spores germinate in the intestinal tract and toxins produced by the spores cause to cause infant botulism. This spore has high durability and heat sterilization at 120 ° C. for 4 minutes or more is necessary. However, heating at high temperature / long time can not avoid honey flavor and nutrient deterioration. Therefore, a sterilization technique by non-heating is required. Therefore, we use instantaneous high pressures in this research. The instantaneous high pressure causes a fast breakdown phenomenon (Spalling destruction) to the density change face by the tensile force due to the rapid density change. It also has the characteristic of non-heating, which is an advantage that there is almost no destruction of nutrients. In addition, the sterilization of the spores in the powder by instantaneous high pressure processing has already been clarified.

The purpose of this study is to clarify processing conditions required for inactivation of spores in liquid using instantaneous high pressure which is non-thermal processing, and to investigate the possibility of using honey for weaning. As a result of honey, oligosaccharides and water, using 50, 200 and 250 instantaneous high pressures processing, the tendency of sterilization of honey and oligosaccharide was observed, but it was found that it is not a high bactericidal effect as compared with water.The viscosity and sugar content of honey, oligosaccharides were 33 dPa・s and 78.5%, 76.3%, and there was hardly any difference. From these results, it was found that highly viscous honey and oligosaccharide were difficult to obtain bactericidal effect, low viscosity water was found to have bactericidal effect, and it was suggested that viscosity and killing rate are related.

The result of sterilization rate



List of Recent Publications

1. Y. Higa, H. Iyama, K. Shimojima, A. Yasuda, O. Higa, A. Takemoto S. Itoh "Computational Simulation of Shock Wave Propagation Characteristics in Foods" The 2nd Intl. Conf. Eng. Sci. Innovative, pp.366-371, 2016
2. A. Takemoto, T. Hamada, Y. Tamaki and S. Itoh "Comparison of extract efficiency of essential oil using shock wave processing with regard to the microwave method" International Workshop on Explosion, Shock-wave and High-velocity Phenomena 2015 pp.40, 2015
3. A. Takemoto, T. Hamada, Y. Tamaki, S. Itoh "Comparison of high efficiency of essential oil extraction using instantaneous high pressure process in hydrodistillation method and microwave method" Nat. Volatiles & Essential Oils 2(3), 2015 pp.119, 13-16, 2015



Biography

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Notes/Comments: