

The Effect of High-Pressure Processing on the Inactivation of *Saccharomyces cerevisiae* in Different Concentration of Manuka Honey and Its Relation with ° Brix

Authors : Noor Akhmazillah Fauzi, Mohammed Mehdi Farid, Filipa V. Silva

Abstract : The aim of this paper is to investigate if different concentration of Manuka honey (as a model food) has a major influence on the inactivation of *Saccharomyces cerevisiae* (as the testing microorganism) after subjecting it to HPP. Honey samples with different sugar concentrations (20, 30, 40, 50, 60 and 70 °Brix) were prepared aseptically using sterilized distilled water. No dilution of honey was made for the 80 °Brix sample. For the 0 °Brix sample (control), sterilized distilled water was used. Thermal treatment at 55 °C for 10 min (conventionally applied in honey pasteurisation in industry) was carried out for comparison purpose. *S. cerevisiae* cell numbers in honey samples were established before and after each HPP and thermal treatment. The number of surviving cells was determined after a proper dilution of the untreated and treated samples by the viable plate count method. *S. cerevisiae* cells, in different honey concentrations (0 to 80 °Brix), subjected to 600 MPa (at ambient temperature) showed an increasing resistance to inactivation with °Brix. A significant correlation ($p < 0.05$) between cell reduction and °Brix was found. Cell reduction in high pressure-treated samples varied linearly with °Brix ($R^2 > 0.9$), confirming that the baroprotective effect of the food is due to sugar content. This study has practical implications in establishing efficient process design for commercial manufacturing of high sugar food products and on the potential use of HPP for such products.

Keywords : high pressure processing, honey, *Saccharomyces cerevisiae*, °Brix

Conference Title : ICEESE 2015 : International Conference on Electrical, Electronics and Systems Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : December 21-22, 2015