

## Effect of high hydrostatic pressure on antimicrobial activity and quality of manuka honey

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The antimicrobial activity of manuka honey is of major interest to beekeepers and the honey industry. In this study, the effect of high hydrostatic pressure and thermal treatments on antimicrobial activity and quality parameters (principally, diastase number and hydroxymethylfurfural levels (HMF)) of manuka honey were investigated. The honey was subjected to different pressures (100-800 MPa) at 25 °C for a range of holding times (15-120 min). The antimicrobial effect was expressed in terms of the minimum inhibitory concentration of the honey, and was found to be 12.5% (w/v). The antimicrobial activity was found to increase with applied pressure for a given holding time, while the diastase number and HMF levels remained, more or less, unaffected. The percentage inhibition in microbial growth correlated linearly ( $R^2 = 0.94$ ) with methylglyoxal concentration in the honey after treatment over the entire range of pressure, temperature and holding times studied. Maximum percentage inhibition (78.83%) was achieved when honey was subjected to 800 MPa compared to the control (57.93%). In addition, the antimicrobial effect of manuka honey subjected to heat treatment between 50 - 70 °C at atmospheric pressure was determined. Thermal treatments at higher temperatures were found to have a detrimental effect on antimicrobial activity based on percentage inhibition as well as methylglyoxal content. Thus, it can be concluded that the levels of methylglyoxal, and therefore the antimicrobial effect of manuka honey, can be enhanced by using high pressure processing without adversely affecting honey quality.

### Biography

Nasser Al-Habsi has completed his Ph.D. at the age of 35 years from Reading University, UK. Currently, he is working at Sultan Qaboos University as assistant Professor in the Department of Food and Nutritional Science.

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