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Use of high hydrostatic pressure for the preservation of camel's milk

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Abstract

The effect of high hydrostatic pressure treatment on the microbial load and general acceptability of fresh camel's milk was tested. Microbes tested were: mesophilic aerobic and psychrotrophic bacteria, Enterobacteriaceae, molds, yeasts and lactic acid bacteria. Pressures applied were 200 to 600 MPa for 5 minutes at 40°C. The main contaminants of camel's milk were the mesophilic aerobic and psychrotrophic bacteria with loads in the range 102 to 103 cfu/ml. Contamination levels with other microorganisms were low. High pressure treatments reduced loads of mesophilic aerobic and psychrotrophic bacteria by up to 0.12, 0.44, 1.23 and 1.45, log cycles at pressures 200, 250, 300 and 350 MPa, respectively. Reductions at pressures 400 to 600 MPa were up to 3.0 log cycles which was the non-detectable level of milk contamination with these bacteria. Other contaminants tested were removed to non-detectable levels at 300 MPa and above. Treatment of 400 MPa seem to be enough to reduce microbial contamination of camel's milk to safe levels. Most affected bacteria were the Gram negatives; treatments up to 350 MPa reduced their counts to non-detectable levels. Color, taste and aroma of treated milk were not affected. Most interesting observation needing investigation was that camel's milk sometimes clots at pressures up to 300 MPa and when it clots the killing effect of pressure on the bacteria decreases. This phenomenon was not seen in cow's or goat's milk treated under similar conditions.

Biography

Siddig H. Hamad got his B.Sc. Agric. from the University of Khartoum Sudan, and completed his Ph.D. at the age of 35 years from the Teschniche Universitaet Berlin. Since then he practiced teaching, supervised post graduate studies and conducted scientific research at the University of Khartoum and King Faisal University. He published 35 papers in reputed local and international journals, participated in the writing of scientific books and attended 32 scientific meetings held in different parts of the world.