Effect of heat treatment on denaturation of whey protein and resultant rennetability of camel milk

The effect of varying heat treatments (65 °C/30 min, 72 °C/30 s, 75 °C/5 min, 85 °C/5 min, 90 °C/5 min) on the degree of whey protein denaturation and rennetability of camel milk was investigated. Bovine milk was used for comparison. In camel milk α-lactalbumin exhibited less denaturation than in bovine milk following heat treatment for 90 °C/5 min and 67% α-lactalbumin was un-denatured as compared to the initial raw milk content, whereas this was only 5% in bovine milk. Camel serum albumin, however, showed substantial denaturation with increase in heat treatment. The gelation time as well as the time to reach maximal gel strength was significantly increased with heat treatment. Camel milk preconditioned to 40 °C exhibited a short gelation time (6 min) which increased to 14 min for milk treated at 65 °C/30 min. Heat treatments at 72 °C/30 s for camel milk resulted in loss of coagulation properties, i.e. very low gel strength or no coagulation within 60 min. A heat treatment process of 65 °C/30 min or 72 °C/30 sec is thus recommended, when making cheese from camel milk.

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