

USE OF ULTRAFILTRATION PROCESS IN THE MANUFACTURE OF MANGO YOGHURT: OPTIMIZATION OF FRUIT PULP LEVEL

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The aim of the present study was to optimize the mango pulp level (MPL) in the yoghurt prepared using milk standardized with 5× ultrafiltered cow skim milk retentate. Three MPLs (6, 8 and 10%) were investigated by keeping total milk solids (TMS) and sugar level in the mango yoghurt mix at 10.2 and 8.0%, respectively. Optimized product was compared with conventionally made mango yoghurt. Whey syneresis of yoghurt was significantly ($p < 0.05$) higher at 10% MPL (13%). Water holding capacity (WHC) of mango yoghurt decreased and firmness increased significantly ($p < 0.05$) with increasing MPL. At 6, 8 and 10% MPLs, WHC was 63.7, 61.4 and 49.4%, respectively and firmness was 2.08, 2.24 and 2.31 N, respectively. Increased firmness might be due to the increase of proteins in the yoghurt mix with the addition of more retentate to maintain the same TMS level. Flavour score of yoghurt was significantly ($p < 0.05$) lower at 8% than at 6% MPL and this might be due to the masking of acidity with increased MPL and proteins, as indicated by significantly ($p < 0.05$) lower acidity score at 8% MPL. Body & texture and overall acceptability scores were significantly ($p < 0.05$) higher in yoghurt made using 6% compared to 8% MPL. Accordingly, 6% MPL was observed to be optimum for the production of mango yoghurt employing ultrafiltration. Average protein content was $4.47 \pm 0.02\%$ & $3.57 \pm 0.04\%$ and lactose content was $3.65 \pm 0.03\%$ & $4.62 \pm 0.08\%$, respectively in optimized and conventional mango yoghurt. Accordingly, optimized mango yoghurt had 1.25 times more protein and 1.27 times less lactose than conventional mango yoghurt. Acetaldehyde concentration was significantly ($p < 0.05$) higher in optimized (21.1 ppm) than that of conventional (18.1 ppm) mango yoghurt. Visible whey was not observed in any of the yoghurts. However, WHC was significantly ($p < 0.05$) lower in conventional (53.61%) than that of optimized (69.39%) mango yoghurt. Firmness was significantly ($p < 0.05$) higher in optimized (2.087 N) compared to conventional (1.198 N) mango yoghurt. Body & texture and overall acceptability scores were significantly ($p < 0.05$) higher in optimized compared to conventional mango yoghurt. Thus, ultrafiltration process can be recommended to make better mango yoghurt at 6% MPL, without the addition of stabilizers and with fewer TMS.

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