

Evaluation of Visco-Elastic Properties and Microbial Quality of Oat-Based Dietetic Food

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Abstract : The evaluation of the visco-elastic properties and microbial quality of a formulated oat-based dietetic food were investigated. Oat flour, pumpkin seed flour, carrot flour and skimmed milk powder were blended in varying proportions to formulate a product with codes OCF, which contains 70% oat flour, 10 % carrot flour, 10 % pumpkin seed flour and 10% skimmed milk powder, OCF which contains 65 % oat flour, 10 % carrot flour, 10 % pumpkin seed flour and 15 % skimmed milk powder, OCF which contains 60 % oat flour, 10 % carrot flour, 10 % pumpkin seed flour and 20 % skimmed milk powder, OCF which contains 55 % oat flour, 10 % carrot flour, 10 % pumpkin seed flour and 25 % skimmed milk powder and OF with 95 % oat as the commercial control. All the samples were assessed for their proximate composition, microbial quality and visco-elastic properties. The moisture content was highest at sample OF (10.73%) and lowest at OCF (7.10%) ($P < 0.05$). Crude protein ranged from 13.38%-22.86%, with OCF having the highest ($P < 0.05$) protein content and OF having the lowest. Crude fat was 3.74% for OCF and 6.31% for OF. Crude fiber ranged from 3.58% - 17.39% with OF having the lowest ($P < 0.05$) fiber content and OCF having the highest. Ash content was 1.30% for OCF and 2.75% for OCF. There was no mold growth in the samples. The total viable ml/wl count ranged from 1.5×10^3 cfu/g - 2.6×10^3 cfu/g, with OCF having the lowest and OF having the highest ($P < 0.05$) total viable count. The peak viscosity of the sample ranged from 75.00 cP-2895.00 cP, with OCF having the lowest and OF having the highest value. The final viscosity was 130.50 cP in OCF and 3572.50 cP in OF. The setback viscosity was 58.00 cP in OCF and 1680.50 cP in OF. The peak time was 6.93 mins in OCF to 5.57 mins in OF. There was no pasting temperature for all samples except the OF, which had 86.43. Sample OF was the highest in terms of overall acceptability. This study showed that the oat-based composite flour produced had a nutritional profile that would be acceptable for the aged population.

Keywords : dietetic, pumpkin, visco-elastic, microbial

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