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Physicochemical and sensory characteristics of fermented bitter gourd (*Mormodica charantia*)

U L R R W Premathilaka*, G M S W Silva, S D T Maduwanthi and T G G Uthpala
University of Sri Jayewardenepura, Nugegoda

A study was carried out to investigate the effect of fermentation with naturally existing microflora, on the physicochemical and sensory properties of three commonly consumed local bitter gourd varieties [*Thinnaveliwhite*(V1), *Mathale green*(V2), *Thumba karavila*(V3)]. The most palatable variety was selected (*Mathale green*) after natural fermentation with salt through sensory analysis. The selected variety was treated under four different conditions [3% dry salt (T1), 3% brine solution (T2), 3% dry salt + 1% sugar (T3) , 3% brine solution + 1% sugar (T4)] and by Kruskal-Wallis test the best treatment was selected (T₁). *Mathale green*, was treated with T₁ conditions and fermented in sterilized bottles for seven days at 27 °C. Physicochemical parameters, total plate count and vitamin C (according to AOAC 2006) were determined. Mean value of the results were statistically analyzed using MINITAB 14 at 5% level of significance. Significant reduction ($p < 0.05$) in the pH (5.9 to 3.7) and an increase in the lactic acid percentage (0.009% to 0.060%) with negligible changes in the salinity level (after 24 hours) were observed in the samples during the test period. Vitamin C level in the pieces decreased while it increased in the brine solution. Total plate count in the samples decreased from 4.13 log₁₀ CFU/g to 2.56 log₁₀ CFU/g during the test period. The overall results indicated the possibility of developing a natural fermented ready-to-serve product with endemic microflora using *Mathale green* variety with prior treatment of 3% salt.

Keywords: Bitter gourd, fermentation, physicochemical characteristics, sensory properties