

Development of murunga leaves (*Moringa oleifera*) based bread spread

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Murunga leaves contain high amount of protein, calcium, magnesium, p, iron, vitamin A, choline, thiamine, vitamin C and valine. This study was carried out to develop a bread spread with dehydrated murunga leaves powder which is considered as an underutilized plant in Sri Lanka. As treatments four recipes were prepared changing the percentage of dehydrated murunga leaves powder (t1=35%,t2=40% ,t3=45%, t4= 50%) and dehydrated carrot powder (t1=15%,t2=10% ,t3=5%, t4= 0%). Sensory evaluation of four samples was conducted by thirty untrained panelists using a five point hedonic scale. The results were analyzed using complete randomized design in factorial experiments. The best recipe out of all treatments was 45% of murunga leaves 5% of carrot powder 35% of margarine, 8.4% of onion 3% of vinegar 1.2% of mustard 1.2% pepper and 1.2% salt. The selected recipe from the sensory evaluation was stored in two packaging materials (glass bottles, polypropylene cups) and stored at two storage conditions, ambient (28-30 oC, 65%-75 RH %) and refrigerated (7-9 oC, 75-80% RH) for three months period. Moisture content, acidity, pH, rancidity, microbial count and sensory acceptability of the product were determined in one month interval using standard methods. Decrease in acidity, increase in pH and moisture were observed in the sample stored in polypropylene cups at ambient condition after one month and microbial count was higher than the standard limit specified by the Sri Lanka Standards Institution of margarine. Also the same result was observed in the samples stored in polypropylene cups at refrigerated condition after two months. There was significant difference (P= 0.05) in moisture content and pH during three months of storage in the samples stored in glass bottles at refrigerated condition and ambient condition while there was no significant difference in titratable acidity at 1st month in the sample stored in glass bottles at refrigerated condition and ambient condition . However, the coliform count was nil in all conditions up to the three months of the storage period. The study revealed that good quality bread spread could be prepared by using dehydrated murunga leaves

powder and can be kept for three months period at ambient and refrigerated condition in glass bottles without quality deterioration.