

## DEVELOPMENT OF RICE-BASED MILK ALTERNATIVE INCORPORATED WITH *ANNONA* AND *MORINGA*

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Rice-based milk alternative (RMA) is suitable for vegans and people suffering from milk allergy. *Annona* (*Annona muricata*) and *moringa* (*Moringa oleifera*) are rich in nutritional and sensory properties. The objective of this study was to develop and evaluate RMA incorporated with *annona* and *moringa*. Rice-based milk alternative was developed using AT 309 rice variety and different concentrations (v/v) of *annona* (25, 50 and 75%) and *moringa* extracts (5, 10 and 15%) were added separately to develop two RMA. The experiments were conducted in Complete Randomized Design. Developed products were evaluated for colour, odour, taste, appearance, and overall acceptability using nine-point hedonic scale. Then proximate composition of all formulations was analyzed and shelf-life was tested by measuring the pH and microbial count for a period of eight weeks. Sensory data revealed that RMA containing 10% *moringa* and 75% *annona* had the highest overall acceptability. The 10% *moringa* incorporated RMA contained  $10.04 \pm 0.04\%$  protein,  $2.66 \pm 0.05\%$  fat, and  $3.24 \pm 0.06\%$  ash. Its protein content was significantly higher ( $p < 0.05$ ) compared to the RMA containing 5% *moringa*. Moreover the 75% *annona* incorporated RMA contained  $6.06 \pm 0.08\%$  protein,  $0.29 \pm 0.14\%$  fat, and  $1.56 \pm 0.06\%$  ash. Its protein content was significantly higher ( $p < 0.05$ ) compared to the RMA containing 25% *annona*. No significant difference ( $p > 0.05$ ) was observed in pH value among three *moringa* incorporated RMA while pH value of *annona* incorporated RMA was significantly different ( $p < 0.05$ ). Total plate count, yeast and mould were not detected in all RMA packed in aluminum bags during 8 weeks of storage time at room temperature. Therefore, it can be concluded that 10% of *moringa* and 75% of *annona* can be incorporated to develop RMA with desired physico-chemical, sensory and microbiological properties.

**Keywords:** *Annona*, Milk alternative, *Moringa*, Rice