

## ABSTRACT

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### **UTILIZATION OF MORINGA LEAVES (*Moringa oleifera* Lam.) TO INCREASE THE AMOUNT OF CALCIUM IN RICE MILK SWEETENED WITH DATE SYRUP**

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(xii + 56 pages, 10 tables, 20 figures, 24 appendices)

Calcium deficiency has always been a problem in Indonesia as the daily calcium intake was far below the recommended daily intake. However, cow milk, a widely available source of calcium, may not be suitable for consumption by people with dietary restrictions. Moringa leaf (*Moringa oleifera* Lam.) is a plant-based rich source of calcium that have been commonly used in fortification to increase the amount of calcium in food products, however, the presence of phytic acid as well as undesired sensory properties limits its utilization. Therefore, this research aims to reduce the amount of phytic acid as well as incorporate date syrup into moringa leaves fortified rice milk to produce rice milk with high calcium content and acceptable organoleptic characteristics. In this research, the phytic acid of moringa leaves were reduced to  $0.0341 \pm 0.0030\%$  and the best drying time of moringa leaves were for 16 hours at  $50^{\circ}\text{C}$  with yield, moisture, ash, and calcium content of  $9.80 \pm 0.25\%$ ,  $5.83 \pm 1.16\%$ ,  $8.32 \pm 0.85\%$ , and  $28.59 \pm 3.85$  mg/g respectively. In the rice milk formulation, 5 variations of moringa leaf flour concentrations (0.04%, 0.06%, 0.08%, 0.1% and 0.12% (w/v)) and 3 variations of date syrup concentration (0%, 2.5% and, 5% (v/v)) was used in the production of moringa rice milk. The preferred formulation was rice milk with 0.12% moringa leaf flour and 5% date syrup with a calcium content, insoluble solids, viscosity, and total soluble solids of  $50.72 \pm 0.10$  mg/100 mL,  $4.28 \pm 1.07$  %,  $159.2 \pm 2.2$  cP, and  $6.35 \pm 0.00$  °Brix respectively. Based on organoleptic analysis, the preferred formulation scored  $4.40 \pm 1.22$ ,  $2.80 \pm 1.22$ ,  $3.76 \pm 1.13$ , and  $3.24 \pm 1.16$  for bitterness, sweetness, mouthfeel, and aroma in the scoring test while in the hedonic test the formulation scored  $4.48 \pm 1.26$ ,  $4.76 \pm 1.33$ ,  $4.28 \pm 1.06$ ,  $4.28 \pm 1.34$ , and  $4.60 \pm 1.32$  for bitterness, sweetness, mouthfeel, aroma, and overall acceptance.

Keywords : Calcium, date syrup, *Moringa oleifera* Lam., rice milk

Reference : 78 (2003-2022)