

## **Green coconut (*Cocos nucifera* L.) as emulsifier replacer in pan bread**

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The edible pulp and the husk generated after extracting the water of green coconut are mainly disposed at the soil, representing a challenge for all the production chains. Environmental awareness encourages studies of food waste for several uses, generating value and promoting a circular economy. Previous studies showed the foaming and emulsifying capacity of green coconut pulp. The foaming capacity is a typical protein property; however, the presence of fat reduced this property but not the foam stability. While the emulsion capacity is only a protein property, and it could be changed by pH, ionic strength, temperature, concentration, and solubility. The objective of this study was to evaluate the green coconut pulp as an emulsifier in pan bread and compared it with distilled monoglycerides.

The proximal content of green coconut pulp was 89.8% water, 0.9% protein, 2.6% lipids, 0.76% ash, and 5.94% carbohydrate. It was dried in a spray dryer (SD-05, RPM, Brazil) from a paste with 25% of a carrier (1 arabic gum, Synth: 3 modified starch, Capsul®Ingredion), 25% of water, and 50% pulp; and in a freeze dryer (LV2000-Terroni, Brazil) at 25 mHg and -50°C for 20h. The bread loaves were made from wheat flour, water, salt, sugar, oil, dried yeast, and a commercial flour improver (control-C). The distilled monoglycerides (DM-0.3%, flour basis) or green coconut pulp; frozen (FP-10%), spray-dried (SD-6.2%), and freeze-dried (FD-1.1%); were added and the pulp solids were kept constant in FP, SD, and FD formulations. The bread loaves were evaluated according to specific volume, center height, and firmness (AACC, 1995).

Bread from FP presented the highest specific volume ( $5.0 \text{ cm}^3 \times \text{g}^{-1}$ ), and FD and SD were not statistically different from DM ( $p > 0.05$ ). All formulations with coconut pulp and monoglycerides presented higher values than C. The greatest height was of SD and FD, besides FP was not statistically different from DM. The lower firmness was presented by SD, but with no difference from FP, and FP was similar to DM. The results indicate that the green coconut pulp, in its different forms, is a promising replacer of distilled monoglyceride in pan bread.

Acknowledgment: IMT[decision13876/22/20]; Fundação Cargill.