

## Effect of Guar Gum and Carboxymethyl Cellulose on Heating Behavior of Coconut (*Cocos nucifera*) Milk

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Thermal processing is used to destroy *Clostridium botulinum* in low acid canned foods such as coconut milk (CM) and thereby, extend the shelf life. The length of the thermal treatment is established based on the targeted thermal destruction (12D destruction) of *C. botulinum*. at 121.1°C in the container cold point. Typically, the addition of stabilizers into CM is performed to increase the emulsion stability and to alter the heat transfer behavior. Therefore, the main objective of this study was to investigate how the heating behavior of CM could be changed with the addition of different stabilizers. During the study, heating behavior and heat-sensitive properties of CM were studied at three different temperatures (30, 50 and 80°C) against the separate addition of Guar Gum (GG) and Carboxymethyl Cellulose (CMC), that were incorporated at levels of 0.05, 0.1 and 0.5%. Extracted fresh CM was standardized for 17% fat and homogenized at 894 g for 5 min. Homogenized samples having different levels of GG and CMC were prepared from standardized CM. Specific gravity and viscosity of prepared samples at 30, 50, and 80°C were determined using the gravimetric method and viscometer, respectively. Cold point and the length of thermal processing to achieve target thermal death time (*F*<sub>0</sub>) of *C. botulinum* (2.52 min) were determined for prepared CM in aluminum cans. It was found that the specific gravity of samples at 30-80°C was in the range of 0.9778±0.05-1.0176±0.01 for GG and 0.9957±0.00-1.0164±0.03 for CMC and that did not significantly differ (*p*>0.05) and viscosity was in the range of 9.98±3.31-126.70±0.00 for GG and 9.98±3.31- 40.00±3.30 for CMC. The cold point of canned CM was found to be the center of the can which was above 3 cm from the bottom. The addition of stabilizers did not affect the cold point of canned CM. Incorporation of GG and CMC into CM had no significant effect (*p*>0.05) on the processing time (80.2-88.8 min. for GG and 86.8-88.8 min. for CMC). In conclusion, the heating behavior of canned CM was not affected by the addition of GG and CMC.

**Keywords:** Coconut Milk, *F*<sub>0</sub>, Cold point, Viscosity, Specific gravity