EVALUATING THE EFFECTIVENESS OF MATE EXTRACT AS ANTIOXIDANT ADDITIVE IN BIODEGRADABLE FILMS MADE OF CASSAVA STARCH WITH COCONUT FIBER NANOCELULOSE

Bruna A. S. Machado, Lindaiá S. Cruz, Tamara N. Silva, João H. O. Reis, Marcelo A. Umsza-Guez, Janice I. Druzian. School of Pharmacy, Federal University of Bahia, - UFBA, Rua Barão de Geremoabo s/n, 40170290, Salvador, Bahia, Brazil and the Industrial Learning National Service - SENAI, Avenida Dendezeiros do Bonfim, 40015006, Salvador, Bahia, Brazil.

Biodegradability and increased food security are the main benefits of active packaging. The incorporation of nanocellulose aims to improve the mechanical and barrier properties of the starch films. The objective of this study was to evaluate the effect of addition of mate in the films and to determine mechanical and barrier properties. Nanocellulose was obtained by acid hydrolysis. The films A (6.0% starch, 1.5% glycerol) and B (4.5% starch, 0.5% glycerol) were prepared by casting with 20% mate and 0.3% nanocellulose. The storage of the palm oil packed in active films and in the controls (film without the additive CA and CB, in PEBD and without packing, CE) was monitored in oxidation rate (63%UR/30°C). The oxidative stability was evaluated by the peroxides index (PI) of the oil and contents of Total Polyphenols (TP) in the films for 40 days. The TP in the films varied between 60.72 to 102.70mg/g (A) and 61.00 to 101.90mg/g (B). The oil packed in the films A and B showed a PI of 35meq/Kg after 40 days, whereas in controls CA, CB, PEBD and CE values of 60.1, 59.0, 97.0 and 115.6meq/Kg were observed, respectively. It was found that as the TP losses in the films increased, there was a smaller increase of the PI in the oil, indicating that instead of the product, the compounds of the package were suffering oxidation. The incorporation of the additive does not change (p>0.05) the mechanical and barrier properties of the films, allowing their use as antioxidant packaging.