

**THE EFFECT OF BEESWAX, RUBBER SEED EXTRACT
(*Hevea brasiliensis*) AND CARRAGEENAN ON INTERNAL
AND SENSORY ATTRIBUTES OF CHICKEN EGGS
STORED UNDER ROOM TEMPERATURE**

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by

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ABSTRACT

Edible coating extends the shelf life of egg by reducing moisture and gas evaporation. Currently mineral oil (MO) coating is used as a common egg coating material. Beeswax (BW) is a natural wax produced by genus *Apis* which can be commonly used as film forming barrier material. Rubber seed wax (RSW) is an oily substance which can be used in bio-diesel and as a coating material. Carrageenan (CAR) is a natural hydrophilic polymer extracted from the cell wall of various red seaweeds. The objective of this study was to compare the internal and sensory properties of BW, RSW and CAR over MO as coating materials in eggs that are stored under room temperature (27 °C, 80% RH). Total of 240 medium-sizes, fresh, white eggs were purchased from commercial layer farm at Wennappuwa. Eggs were coated with MO, BW, RSW (Brix value of 24), CAR and non-coated (NC) eggs were used as the (-) control. The eggs were stored under room temperature (27±3 °C) for 7 weeks. Internal qualities (Haugh unit (HU), pH, and weight loss), sensory attributes and microbial contamination of the eggs were measured at each week. Changes in egg white structure were measured using the FTIR technique. HU decreased significantly in NC eggs from 80.25±8.84 to 39.41±3.79 (p<0.05) but MO, RSW and CAR coated eggs had their HU decreased from 80.25±8.84 to 59.14±4.21, 60.61±3.46 and 46.88±6.81 respectively after 7 weeks of storage. Beeswax coated eggs were unable to measure due to attached albumen with shell membrane. NC eggs lost 7.87±0.57% of their weight while MO-, BW-, RSW- and CAR coated eggs showed 0.33±0.01%, 0.13±0.04%, 2.01±0.56% and 7.62±0.60% weight loss, respectively. There was no significant difference in sensory attributes in all treatments up to second week (p>0.05). After third week beeswax coated eggs showed the lowest value for texture, taste of yolk and white and overall acceptability. However, after 4th week NC eggs could not be analyzed further due to low HU. But MO and RSW coated eggs had no changes in sensory attributes up to fifth week of storage (p>0.05). FTIR analysis showed same absorbance peaks throughout the storage in all treatments resulting, no changes in albumin structure. Microbiology results revealed all coated eggs were free from *Salmonella* sp. In conclusion, RSW can be used as a good alternative coating material to MO to increase the shelf life of eggs up to 7 weeks of storage under room temperature conditions.

Key words: White eggs, Mineral oil, Beeswax, Rubber seed wax, Carrageenan, Shelf life