DEVELOPMENT OF AN EDIBLE COATING USING CRUDE ALGINATE INCORPORATED WITH ASCORBIC ACID FOR MINIMALLY PROCESSED TENDER JACKFRUIT LAM (*Artocarpus heterophyllus*)

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ABSTRACT

Jackfruit *(Artocarpus heterophyllus)* lam is a highly available, demanded tropical food because its' sensory attributes are similar to meat. Many processors involved in minimally processing of Jackfruit lam due to the demand. However, the challenge is the enzymatic browning. Therefore, processors are in need of healthy, cost effective ways to minimize the browning. Hence, this study was conducted to minimize the browning in Jackfruit lam using an edible coating from seaweed hydrocolloid. Seaweed hydrocolloid was extracted from highly abundant, locally available, underutilized brown algae species, *Sargassum ilicifolium* by sequential bio-refinery extraction process. The extracted yield of crude alginate was 31.4% of alga (w/w). Sliced lam was coated using dipping method. Extracted crude alginate, commercial food grade alginate, gelatin with and without ascorbic acid were coated at the room temperature. Citric acid, ascorbic acid treated and uncoated samples were served as the control. After sensory evaluation at day 0 selected highly acceptable coating formulations including extracted alginate incorporated with ascorbic acid (EAL/VC), gelatin with ascorbic acid (GEL/VC) and gelatin (GEL) with uncoated samples (UC) for further analysis. Then, these coated samples were packed in a sealed polyethylene bag and stored at room temperature (RT) and refrigerated conditions (RF) separately. Samples were evaluated for browning index (BI), color (L-values and a-values), radical scavenging activity (DPPH assay), lipid oxidation (TBARS assay), total plate count (TPC), shelf life and sensory properties for 4 days. Boiled lam were served for 30 untrained panelists with 9-point hedonic scale to evaluate sensory properties. Jackfruit lam coated using crude alginate with ascorbic acid (EAL/VC) stored at RT showed significantly ($p<0.05$) higher sensory properties while reduced BI compared to uncoated lam ($p<0.05$) in both temperature regimes. Further, jackfruit lam coated using EAL/VC has highest radical scavenging activity, lowest TBARS values and TPC. Hence, Jackfruit lam coated using crude sodium alginate with ascorbic acid could be used as an effective coating to reduce enzymatic browning with extended shelf life for 3 days at room temperature and 2 days under refrigerated conditions.

Keywords: Brown algae, Enzymatic Browning, Seaweed Hydrocolloid, Edible coating, Jackfruit lam