

**DEVELOPMENT OF AN EDIBLE COATING USING
CRUDE EXTRACT OF *Sargassum ilicifolium***

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ABSTRACT

Edible films and coatings made up of plants like seaweeds have high demand in the world. *S. ilicifolium* is a brown seaweed that shows excellent antimicrobial, antioxidant and antiviral properties. Hence, the present study was conducted to develop gelatine based edible coating materials using crude extraction of *S. ilicifolium* and to determine its functional and physiochemical properties. Dried and coarsely powdered seaweeds were subjected to solvent extraction using methanol, ethanol, chloroform and acetone. The yield and proximate analysis of crude extracts were determined. The antioxidant activity was determined using DPPH and TBARS assays. Antimicrobial activity was determined by agar well diffusion method. Different concentrations of ethanolic extract of *S. ilicifolium* which dissolved in water was incorporated with gelatin to make edible films and coatings. Transparency, water solubility, moisture content, density and colour were checked in films. Tuna fish samples were dipped in seaweed concentrated solutions and stored under freezing temperature (-18 °C). Its moisture loss, total plate count and TBARS was checked in 3-day time intervals. A sensory analysis was conducted to fish samples. Significantly highest extraction yield was obtained by the methanolic crude extraction (17.18±3.20%) while 9.60±2.14%, 2.80±0.59%, and 3.60±0.37% yields were from ethanol, acetone and chloroform extractions, respectively (p<0.05). DPPH scavenging activity of the methanolic and the ethanolic crude extractions were 21.47±2.81% and 14.93±2.55% (p<0.05). No malonaldehyde was produced in all seaweed extracts. A significantly less moisture loss was observed in seaweed coated fish samples compared to uncoated fish samples. Malondialdehyde produced in fish samples were significantly reduced with time. Consumer acceptance for 0.08 mg/mL seaweed concentrated fish sample was significantly different (p<0.05). This study concludes the presence of bioactive components in crude extracts of *S. ilicifolium* and gelatine-based films and coatings made up of ethanolic extract of seaweed can be used as an ingredient of food industry.