

**DEVELOPMENT OF SEA LETTUCE (*Ulva lactuca* AND
Ulva fasciata) INCORPORATED CRACKERS**

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ABSTRACT

Consumer demand for functional foods is increasing rapidly. Edible green seaweeds of *Ulva* species are underutilized in Sri Lanka despite relative abundance. This study examines the potential for producing crackers incorporated with *Ulva* species as a functional food. *Ulva lactuca* (UL) and *Ulva fasciata* (UF) collected from Southern Coast of Sri Lanka were oven dried separately (40°C/12 h) until moisture content reached below 10% and milled to a coarse powder. Crackers were prepared using wheat flour, incorporating 2% and 4% of UL or UF powder separately. Crackers incorporated with no seaweed was used as a control. Dehydrated seaweed powders and prepared crackers were analyzed for total phenolic content (Folin-Ciocalteu method), total flavonoid content (Aluminum chloride method) and radical scavenging activity (DPPH method). Radical Scavenging Activity (RSA) of UL ($47.05 \pm 0.78\%$) and UF ($48.4 \pm 0.57\%$) powders displayed no significant difference. Total phenolic content (TPC) of UL and UF powders were 0.80 ± 0.048 and 0.85 ± 0.059 mg gallic acid equivalents/g dry weight respectively ($p > 0.05$). UL and UF powders demonstrated respective total flavonoid contents (TFC) of 9.16 ± 0.57 and 8.38 ± 0.17 mg rutin equivalents/g dry weight ($p > 0.05$). Sensory evaluation revealed higher sensory attributes ($p < 0.05$) in 4% seaweed incorporated crackers compared to control and 2% seaweed incorporated crackers. Compared to control ($8.46 \pm 0.51\%$), 4% UL crackers ($10.36 \pm 0.49\%$) and 4% UF crackers ($9.70 \pm 0.40\%$) had higher crude protein contents ($p < 0.05$). No significant differences were detected in TPC and TFC of 4% and 0% seaweed incorporated crackers ($p > 0.05$) indicating that baking temperature may have considerably destroyed TF and TP. However, RSA of 4% UL ($41.09 \pm 0.41\%$) and 4% UF crackers ($42.30 \pm 0.69\%$) indicated significantly higher ($p < 0.05$) antioxidant activity compared to control revealing that these seaweeds may contain heat stable chemical constituents besides TF and TP apparently contributing to

RSA levels. The study revealed that *Ulva* species can be incorporated in crackers as a rich source of antioxidants along with colour and flavour properties.