

## **Biochemical Analysis of Underutilized Seaweed *Ulva lactuca* from Matara, Sri Lanka and Its Application in the Development of a Nutribar**

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Compared to land based agriculture, ocean farm seems to be more sustainable as it does not required land, fresh water and chemical fertilizers. Therefore cultivation of seaweeds has the ability to grow mammoth amounts of nutrient-rich food for humanoid consumption. The underutilized macro algae *U. lactuca* was manually collected during July, 2017 from Thalaramba coast Matara, Down South; Sri Lanka. Then cleaned seaweeds were subjected to oven drying at 60 °C for 8 h. Proximate composition, minerals from inductively coupled plasma optical emission spectrometry (ICP-OES), swelling capacity (SWC), water holding capacity (WHC) and oil holding capacity (OHC) were evaluated. Finally crude protein contents and radical scavenging activities were investigated for 0, 5 and 10% algal incorporated nutribars. Moisture content of fresh algae was  $80.08 \pm 0.61\%$  and dry matter content was  $19.92 \pm 0.61\%$ . The crude protein content found in green algae was  $20.16 \pm 0.16\%$ . Iron was the dominant mineral present in *U lactuca* ( $363.03 \pm 13.54$  mg kg<sup>-1</sup>). Cell wall polysaccharide content obtained was 17.21%. In this study WHC of pulverized *U lactuca* was about 4.39 g of water per g of dry matter. SWC was  $1.00 \pm 0.10$  mg/g and OHC was 2.22 g/g at room temperature (25 °C). Significantly the highest protein content ( $8.55 \pm 0.38\%$ ) was inspected for 10% algal added nutribar while  $7.54 \pm 0.15\%$  for 0% and  $7.89 \pm 0.03\%$  for 5% algal added nutribar also the highest radical scavenging activity (34.47%) was observed in 10% *U lactuca* added nutribar. Therefore incorporation of under-utilized green algae can significantly increase the protein content and antioxidant activity of the nutribar. Moreover it can be used to develop novel healthy and nutritious foods in Sri Lanka.

*Keywords:* Nutribar, *Ulva lactuca*, Seaweeds, Nutraceuticals, Functional Foods