

**Proximate Composition and Heavy Metal Content of Six Sea Cucumber Varieties
Harvested from Northern Province of Sri Lanka**

Riskan, S.K.^{1*}, Rayees, R.A.¹, Bandara, W.M.M.D.¹, Nishanthan, G.² Rathnayake, H. A.¹

¹Department of Food Technology, Faculty of Technology,
Rajarata University of Sri Lanka.

²Department of Aquaculture and Fisheries, Faculty of Livestock and Fisheries,
Wayamba University of Sri Lanka.

*riskan.skm@gmail.com

The study focused on the proximate composition and heavy metal content of six commercially valuable dried sea cucumber species from Sri Lanka's Northern Province coastal areas: *Stichopus naso*, *Holothuria spinifera*, *Bohadchia marmorata*, *Holothuria scabra*, *Thelenota ananas*, and *Bohadchia vitienensis*. Proximate composition revealed high protein and ash contents across all species. *H. spinifera*, *B. marmorata*, and *T. ananas* stood out with the highest protein values of $73.35 \pm 0.81\%$, $71.33 \pm 1.21\%$, and $70.61 \pm 0.49\%$ respectively. In terms of ash content, *S. naso*, *H. scabra*, and *T. ananas* displayed the highest values at $24.08 \pm 1.4\%$, $18.11 \pm 0.10\%$, and $18.64 \pm 0.25\%$ respectively. Fat content was notably low in all species, with *T. ananas* ($1.78 \pm 0.13\%$), *H. scabra* ($2.08 \pm 0.12\%$), and *B. marmorata* ($2.59 \pm 0.01\%$) exhibiting the lowest values. Regarding heavy metal concentrations, lead (Pb) was detected in all samples, with *H. scabra* having the lowest Pb content at $21.06 \pm 0.20 \mu\text{g/l}$, significantly lower ($p < 0.05$) than the others. Cadmium (Cd) and arsenic (As) were not detectable in *H. spinifera*, *B. marmorata*, and *H. Scabra*. The study concludes that all sea cucumber varieties are rich in protein and minerals, making them a healthy marine food source. However, contamination with heavy metals, particularly lead, was evident in all samples, pointing to environmental pollution. *H. scabra* from the Northern coastal areas of Sri Lanka was identified as the best choice due to its nutritional benefits and lower heavy metal concentrations. The implications of the findings stress the importance of informed seafood choices, considering both nutrition and potential contaminants. It also highlights the need for proper environmental practices to prevent marine resource contamination.

Keywords: Atomic adsorption spectrometer; Heavy metal; Protein; Sea cucumber