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Proximate composition of fresh and processed six commercially important sea cucumber species in Sri Lanka

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Consumption of sea cucumbers is becoming popular around the world and usually they are marketed as frozen and dried products (*bêche-de-mer*). As major processing steps, which consist of physiochemical alterations, are believed to impact on the nutrient composition of *bêche-de-mer*, this study compared the proximate composition of six commercially important sea cucumber species; *Bohadschia marmorata, Bohadschia* sp., *Holothuria scabra, Holothuria spinifera, Stichopus chloronotus* and *Thelenota anax* before and after processing. Fresh and processed sea cucumber samples were collected from divers and the commercial processors in the northwest coast of Sri Lanka from October 2015 to November 2016. The methods defined by Association of Official Analytical Chemists (AOAC) were used to analyze the proximate composition. The moisture content of fresh specimens ranged from 80.48%-92.55%, while in processed products it was from 16.64% to 32.95%. Among fresh sea cucumbers, *T. anax* ($92.55 \pm 0.31\%$) reported the highest moisture content followed by *S. chloronotus* ($92.42 \pm 0.48\%$) and in processed forms, *H. scabra* reported the highest level ($32.95 \pm 1.05\%$). The ash percentage ranged from 17.90%- 48.14% and 16.54 - 43.77% in fresh and processed specimens, respectively. Processed *H. spinifera, T. anax* and *S. chloronotus* reported the significantly lower ash content than the fresh individuals and for the rest of the species it was vice versa ($p < 0.05$; t-test). It seems that processing has a significant impact on crude fat and crude protein composition of these species. The fat content ranged from 0.97-3.94% in fresh individuals and 1.17-2.12% in processed individuals. Significant reduction of fat content was reported in processed *T. anax, Bohadschia* sp. and *S. chloronotus* than the fresh specimens ($p < 0.05$; t-test). However, processed *H. scabra* and *B marmorata* reported significantly higher-fat content ($p < 0.05$; t-test). The crude protein percentage of fresh (44.63-57.93%) and processed (46.28-58.11%) sea cucumbers was found to be within the similar range. *S. chloronotus* ($57.93 \pm 1.47\%$) and *H. spinifera* ($58.11 \pm 0.46\%$) reported the highest crude protein content among fresh and processed specimens, respectively. Although there is a significant reduction in crude protein content in processed *B. marmorata* and *S. chloronotus,* all the other processed specimens except for *Bohadschia sp.* reported the significantly higher crude protein content than the fresh specimens ($p < 0.05$; t-test). The observed differences in the proximate composition of fresh and processed sea cucumbers could be attributed with the processing steps that they are subjected to.

Keywords: *Bêche-de-mer,* Proximate composition, Sea cucumbers