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Mineral spectrum (Na, K, Ca, Mg, Fe, Mn, Zn, Cr and Ni) in different body parts of five species of Tuna

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Minerals are the constituents that remain as ash after the incineration of plant and animal tissues. The concentration of minerals in fish and fishery products is influenced by a number of factors (ex. species, size, age, sex *etc.*). The present study was carried out to determine some minerals in different body parts (skin, head muscle, belly flap, red muscle and white muscle) of five species of Tuna: Skipjack (*Katsuwonus pelamis*), Yellow fin tuna (*Thunnus albocare*), Bullet tuna (*Auxis rochei*), Frigate tuna (*Auxis thazard*) and Kawakawa (*Euthynnus affinis*). The fish samples were obtained from Pitipana, Negombo landing site (July 2006-April 2008). Ashes were obtained using a muffle furnace (550^{o}C) and analyzed with an Atomic Absorption Spectrophotometer (GBC 932 plus).The concentration of each element was calculated according to their absorbencies. Na concentration among tuna varied from 4906.20±819.73 µg/g (head muscle, Frigate tuna) to 1691.67 ± 285.13 µg/g (skin, bullet tuna), while the head regions of each species contained the highest amount of Na with respect to other body parts ($p < 0.05$). K concentrations ranged from 8449.27 ± 932.22 µg/g (Belly flap, yellow fin tuna) - 4059.52 ± 1748.74 µg/g (skin, Bullet tuna) ($p < 0.05$). Ca concentration among these tunas ranged from 6113.68 ± 3356.81 µg/g (skin, bullet tuna) - 171.60 ± 86.60 µg/g (Red muscle, Yellow fin tuna). The highest concentration of the Ca ($p < 0.05$) was always recorded in the skin samples. Mg concentration among the tuna ranged from 592.57 ± 131.00 µg/g (skin, skipjack) -1861.09 ± 100.79 µg/g (belly flap, kawakawa), Mg concentration in the different body parts were significantly different only in skipjack and frigate tuna ($p < 0.05$). Fe concentration in the tunas ranged from 27.29 ± 3.66 (white muscle, Yellow fin tuna) - 156.99 ± 73.79 (Red muscle, Frigate tuna). Red muscles of all tunas were significantly rich in Fe compared to the other body parts ($p < 0.05$). Except for the skin of kawakawa, the concentration of Mn was always less than 5 µg/g. Zn concentration ranged from 16.82 ± 1.79 µg/g (White muscle, Frigate tuna) -73.65 ± 39.47µg/g (Skin, Kawakawa). The head of skipjack recorded the highest concentration of Cu (76.02 ± 98.5619 µg /g) while others recorded less than 20µg /g (0.36 ± 0.19 µg/g, head, Bullet tuna - 17.27±8.63µg /g, Belly flap, Skipjack).Chromium and Nickel were either not detected in the samples or those recorded were less than 1.55 µg/g and 1.18µg/g respectively. These five species of tunas were rich in minerals, both macro and micro elements (Na, K, Mg, Ca, Fe, Mn, Zn, Ni, Cu, and Cr). The highest amount of Fe was recorded in the red flesh in all tunas while the Ca concentration was high in their skins.