

Blood mineral concentrations in manatees (*Trichechus manatus latirostris* and *Trichechus manatus manatus*).

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Abstract

Limited information is available regarding the role of minerals and heavy metals in the morbidity and mortality of manatees. Whole-blood and serum mineral concentrations were evaluated in apparently healthy, free-ranging Florida (*Trichechus manatus latirostris*, n = 31) and Belize (*Trichechus manatus manatus*, n = 14) manatees. Toxicologic statuses of the animals and of their environment had not been previously determined. Mean mineral whole-blood (WB) and serum values in Florida (FL) and Belize (BZ) manatees were determined, and evaluated for differences with respect to geographic location, relative age, and sex. Mean WB and serum silver, boron, cobalt, magnesium, molybdenum, and WB cadmium concentrations were significantly higher in BZ versus FL manatees ($P < 0.05$). Mean WB aluminum, calcium, manganese, sodium, phosphorus, vanadium, and serum zinc concentrations were significantly lower in BZ versus FL manatees. Adult manatees had significant and higher mean WB aluminum, manganese, sodium, antimony, vanadium, and serum manganese and zinc concentrations compared to juvenile animals. Significant and lower mean WB and serum silver, boron, cobalt, and serum copper and strontium concentrations were present in adults compared to juveniles ($P < \text{or} = 0.05$). Females had significant and higher mean WB nickel and serum barium compared to males ($P < \text{or} = 0.05$). Mean WB arsenic and zinc, and mean serum iron, magnesium, and zinc concentrations fell within toxic ranges reported for domestic species. Results reveal manatee blood mineral concentrations differ with location, age, and sex. Influence from diet, sediment, water, and anthropogenic sources on manatee mineral concentration warrant further investigation.

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