Published: September 1978

Concentration of Iodine and bromine by plants in the seas of Japan and Okhotsk

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Marine Biology **47**, 243–250(1978)

Abstract

Iodine and bromine content were measured in 24 species of red (Rhodophyta), brown (Phaeophyta) and green (Chlorophyta) seaweeds and 2 species of higher water plants (Embryophyta) from the Sea of Japan, as well as in 12 species of the abovecited taxa and 1 species of flowering plant from the Sea of Okhotsk. Iodine was determined by photometric extraction with brilliant green, and bromine by neutron activation of samples. Phaeophyta and Rhodophyta were richest in iodine and bromine content. Representatives of the order Ceramiales (Rhodophyta) had high iodine and bromine contents. Thus, iodine concentrations in *Ptilota filicina, Campylaephora hypnaeoides* and *Myriogramme yezoensis*, a new iodine concentrator discovered by us, amount to 0.42, 0.094 and 0.75%, respectively. Bromine content in representatives of the family

Rhodomelaceae was 3.36 and 3.74% in Japan Sea and Okhotsk Sea *Rhodomela larix*, respectively. *Polysiphonia japonica* (Rhodomelaceae) is a newly discovered concentrator of bromine (3.20%). Many species of the order Laminariales (Phaeophyta) were characterized by high iodine contents: *Laminaria japonica, L. cichoriodes, L. inclinatorhiza, Cymathaere japonica* and *Alaria marginata*. The Br:I ratio for all the species except those that concentrated iodine, was more than 1. Seaweeds that grow at greater depths showed increased iodine and bromine contents. A tendency toward increased iodine content was observed in species growing further to the North. Iodine and bromine were accumulated selectively by various organs of *Sargassum pallidum*.

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Communicated by M.E. Vinogradov, Moscow

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About this article

Cite this article

Saenko, G.N., Kravtsova, Y.Y., Ivanenko, V.V. *et al.* Concentration of Iodine and bromine by plants in the seas of Japan and Okhotsk. *Mar. Biol.* **47,** 243–250 (1978). https://doi.org/10.1007/BF00541002

- Accepted17 March 1978
- Issue DateSeptember 1978
- DOIhttps://doi.org/10.1007/BF00541002

Keywords

- Iodine
- Bromine
- Neutron Activation
- Great Depth

- Flowering Plant