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SHORT REPORTS

VANADIUM IN THE BROWN SEAWEED, *DESMARESTIA FIRMA*

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Key Word Index—*Desmarestia firma*; brown seaweed; alga; vanadium.

Both *Desmarestia firma* and *D. ligulata* contain free sulphuric acid (6% of the dry weight in the former species) [1]. No reason for this acid content has so far been discovered. Both species grow below low tide level. Ascidians which grow submerged also contain free sulphuric acid (up to 1.0 molar), and it is considered [2] that this is connected with a high vanadium content (1300 ppm). It has been suggested [3] that the highly acidic environment results in the vanadium oscillating between the oxidation states of 3 and 4 using oxygen gas as the oxidant. To determine if vanadium played a similar role in *D. firma*, the seaweed was analysed for vanadium.

RESULTS AND DISCUSSION

The concentration of vanadium in the 5 samples varied from 1.50 to 2.50 ppm. Work by Yamamoto *et al.* [4] on species of Sargassaceae, Ishigeaceae and Spermatochnaceae found that the vanadium contents of these brown seaweeds varied from 0.82 to 10.5 ppm. Although *D. firma* does contain some vanadium the quantity is comparable with other seaweeds which are devoid of free sulphuric acid. It is therefore concluded that the sulphuric acid in *D. firma* has a role different from that present in ascidians which possess an abnormally high content of vanadium, but could perhaps have the same function with another metal.

EXPERIMENTAL

The sample of *Desmarestia firma* was collected from 10 m depth in False Bay, Cape Town, South Africa, by Richard Simon and his colleagues in March, 1975, and was freeze-dried immediately after removal from seawater. Five different aliquots of weed (5 g each) were analysed for vanadium by the method of Jones and Watkinson [5].

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SESQUITERPENES FROM THE ESSENTIAL OIL OF *ASTRANTIA MAJOR*

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Key Word Index—*Astrantia major*; Umbelliferae; essential oil; sesquiterpenes; β-sinensal; β-sinensol; β-sinensyl acetate.

Astrantia major L., (family Umbelliferae, subfamily Saniculoideae) is a robust perennial found in Central Europe. The plant has previously been investigated for various constituents [1, 2]. However, although the essential oils of many species of the Umbelliferae have been extensively studied, very little is known about those of *A. major* or other members of the subfamily Saniculoideae [2]. Since the chemical characters of these oils clearly have a high selective value for chemotaxonomic purposes [3] an investigation into the constituents of the essential oil of *Astrantia major* was started. This publication deals with the isolation and structural elucidation of three sesquiterpenes, isolated from the essential fruit oil.

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* Where reprints are available.