

**B121 Polysaccharides from the lichen *Thamnolia vermicularis* var. *subuliformis***E.S. Olafsdottir<sup>a</sup>, S. Omarsdottir<sup>a</sup> and B. Smestad Paulsen<sup>b</sup><sup>a</sup> University of Iceland, Faculty of Pharmacy, Hagi, Hofsvallagata 53, IS-107 Reykjavik, Iceland. <sup>b</sup> University of Oslo, Institute of Pharmacy, Department of Pharmacognosy, P.O. Box 1068 Blindern, N-0316 Oslo, Norway.

About 13500 species of lichens have been described, however less than 100 species have been investigated for polysaccharide constituents (1). Many polysaccharides from lichens have been found to have immunological activities (1). The lichen *Thamnolia vermicularis* var. *subuliformis* (Ehrh.) Schaer has been shown to contain a complex heteroglycan with an unusual rhamnopyranosylgalactofuranan structure, which was active in the phagocytosis assay and anti-complementary assay (2). The purpose of this study is the isolation and structural elucidation of other polysaccharides from this lichen.

The polysaccharides were extracted with hot water and 0.5 M NaOH, isolated by ethanol precipitation and dialysis, chromatographically purified with ion-exchange, gel filtration and preparative HP-GPC. The polysaccharides were structurally characterized by <sup>1</sup>H and <sup>13</sup>C NMR spectroscopy, methanolysis, methylation analysis using GC-MS, enzymatic and weak acid hydrolysis followed by analysis of oligosaccharides. The molecular weights were determined by HP-GPC.

In addition to the complex heteroglycan previously described, the *T. vermicularis* var. *subuliformis* was shown to contain a gel forming  $\beta$ -glucan not found in lichens before. The glucan was isolated in about 9% yield from the alkali extract and was shown to have a (1 $\rightarrow$ 3)- $\beta$ -D-glucopyranosyl backbone with (1 $\rightarrow$ 6)- $\beta$ -D-glucopyranose sidegroup for every third unit in the backbone, and a molecular weight of about 67 kD. Two rhamnose containing galactomannans were isolated from the water extract and shown to have molecular weights about 18kD and 200kD respectively.

In conclusion we find that this lichen produces polysaccharides with unusual structures and besides being of interest as possible immunostimulators, these new structure could also be of interest from a chemotaxonomical point of view.

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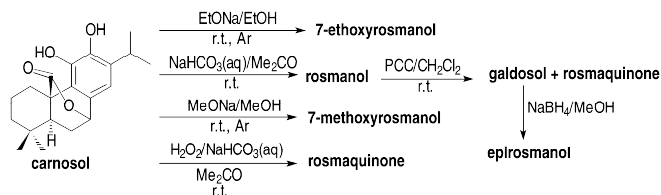
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**B122 Approach to total synthesis of abietatriene diterpenes isolated from genus *Salvia***

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A member of the Labiatae family, the genus *Salvia* consists of some 500 species found worldwide. Since ancient times, many species of the genus have been credited with medicinal properties (1,2), and thus reward investigation. *Salvia* extracts have shown interesting biological activity as antibacterial (3) and antioxidant (4). Some abietane diterpenes isolated from the endemic Canary Island plant *Salvia canariensis* L. have shown interesting antimicrobial and cytotoxic activities (5,6). Many of these compounds are isolated from the extract of the plant in very low quantities. We have interested in the synthesis of these type of diterpenes and their related compounds. We describes the transformation of carnosol in the already known compounds rosmanol (7), rosmaquinone, 7-methoxyrosmanol, 7-ethoxyrosmanol (8), galdosol (9) and epirosmanol (10).



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