

# Isolation from Birch Wood of an Aliphatic Oligoterpene Alcohol, a Methyl Ester of a Hydroxy-triterpene Carboxylic Acid and a Triterpene Alcohol

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Birch wood (*Betula verrucosa*) extracts have been found to contain fatty acid esters of a group of isoprenic alcohols, the amount of these esters being about 0.25 % based on the weight of the wood.

The alcohol present as the major constituent was isolated as an oil  $[\alpha]_D \pm 0$

are of both types. The largest fragment in the mass spectrum of the acetate has mass number  $543 \pm 5$ , which corresponds to  $n = 8$  in the formula (I) assuming that this fragment is formed from the molecular ion with the exclusion of  $\text{CH}_3\text{COOH}$  (the theoretical value is 544).

Another alcohol was isolated as a waxy material,  $[\alpha]_D + 29^\circ$  ( $\text{CHCl}_3$ ). The NMR spectrum had sharp peaks at 0.78, 0.88, 0.95, 1.07, and 3.67 ppm indicating that the compound was a triterpene. The presence of a carboxymethyl group was evident both from the peak at 3.67 ppm in the NMR spectrum and a maximum at  $1740 \text{ cm}^{-1}$  in the IR spectrum. As the triterpene had not been saponified during the alkaline hydrolysis involved in the isolation, the carboxymethyl group must be very stable, as for example, the carboxymethyl group in methyl betulinate.

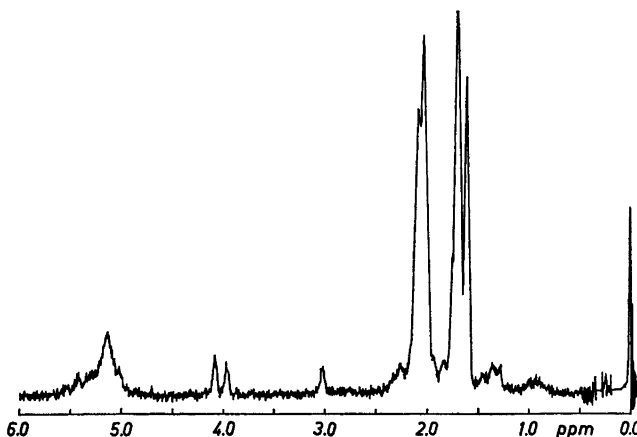


Fig. 1. NMR spectrum of the aliphatic oligoterpene alcohol. Carbon tetrachloride solution. 60 Mc.

( $\text{CHCl}_3$ ). The NMR (Fig. 1) and the IR spectra relate the alcohol to the aliphatic terpenes solanesol<sup>1</sup> (I,  $n = 9$ , all-*trans* double bonds) and dolichol<sup>2</sup> (II, mainly *cis*). The NMR spectrum shows that it contains 8 isoprene units either partly or wholly as in (I), and that the double bonds

A further alcohol was isolated, m.p.  $164-6^\circ\text{C}$ ,  $[\alpha]_D + 11^\circ$  ( $\text{CHCl}_3$ ) which gave elemental analyses corresponding to the formula  $\text{C}_{30}\text{H}_{50}\text{O}$ . The NMR spectrum showed sharp peaks at 0.55, 0.83, 0.91, 0.99, 1.03, 1.15, 1.52, and 1.65 ppm again indicating a triterpene.

