# CHEMISTRY

I. I. Bardyshev, V. V. Kokhomskaya, and L. I. Ukhova

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## Abstract

## Full Text

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# NEOABIETIC ACID–THE PRIMARY ACID OF SCOTS PINE OLEORESIN

*(Presented by Academician B. A. Arbuzov, July 4, 1956)*

The individual resin acids comprising the oleoresin of Scots pine (*P. silvestris*) growing within the USSR should be considered to be levopimaric, dextropimaric, and abietic acids ([1,2]). The question of the existence of $\alpha$- and $\beta$-sapinic acids is controversial ([3]).

In the present work it is shown that neoabietic acid (1) is the primary acid of the oleoresin of Scots pine.

$H_3C$ COOH
[structural formula of neoabietic acid]
$=C(CH_3)_2$

## Experimental Part

Crystalline resin acids were filtered off from the liquid portion of the oleoresin, recrystallized from methanol, and, by the usual method ([1]), converted into sodium salts. The crystals of the sodium salts were filtered off, and the filtrate was decomposed with boric acid. In this way two acid fractions were isolated with $[\alpha]_D - 82^\circ$ and $[\alpha]_D - 63^\circ$ (the specific rotation was always determined in a 1% alcoholic solution).

From 100 g of acids with $[\alpha]_D - 63^\circ$ (Fig. 1, 1), levopimaric acid ([4]) was removed by means of twice-distilled maleic anhydride, and the remaining resin acids with $[\alpha]_D + 52^\circ$ (Fig. 1, 2) were converted into diethylamine salts. By fourfold crystallization of these salts from acetone and subsequent decomposition of the salt with boric acid, neoabietic acid was obtained with m.p. 178—180° and $[\alpha]_D + 172^\circ$ (Fig. 1, 4). Elemental analysis and titration of the acid confirm the formula $C_{20}H_{30}O_2$.

A second sample of neoabietic acid with m.p. 177.5—179° and $[\alpha]_D + 175^\circ$ (Fig. 2, 5) was obtained from the same acid fraction without preliminary treatment with maleic anhydride, by simple fivefold crystallization of their diethylamine salt from acetone. The diethylamine salt of this acid fraction, separated from the filtrate, had m.p. 112—117° and $[\alpha]_D - 19.6^\circ$ (Fig. 2, 6). In Fig. 2, curves 1, 2, 3, and 4 show the changes of the specific absorption coefficient of the salt of this fraction during successive crystallizations. After the fifth crystallization the salt had m.p. 154-157° and $[\alpha]_D + 121^\circ$. It should be noted that our samples of neoabietic acid

**Fig. 1**

**Fig. 2**

**Fig. 1.** Ultraviolet absorption spectra: **1** –initial mixture of resin acids; **2** –resin acids after removal of levopimaric acid; **3** –diethylamine salt of neoabietic acid; **4** –neoabietic acid.

**Fig. 2.** Ultraviolet absorption spectra: **6** –diethylamine salt of the initial resin acids; **1, 2, 3,** and **4** –the same after successive crystallizations of the salt from acetone; **5** –neoabietic acid.

have higher values of melting point and specific rotation than the sample of this acid described in the literature[5].

Institute of Chemistry
Academy of Sciences of the BSSR

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## CITED LITERATURE

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[5] G. C. Harris, T. F. Sanderson, J. Am. Chem. Soc., **70**, 334 (1948).

## CORRECTION

In the article by I. I. Bardyshev and L. I. Ukhova, "Abietic Acid–the Primary Resin Acid of the Oleoresin of Scots Pine," published in DAN, vol. 109, No. 1, p. 90, 1956, a misprint was made. For low-melting abietic acid $[\alpha]_D = -11.6^\circ$ was given; it should be

$$[\alpha] = -116.7^\circ$$

*Note: Figure translations are in progress. See original paper for figures.*

*Source: Math-Net.Ru and CyberLeninka. Machine translation. Verify with the original.*