

# Foliar and Cortex Oleoresin Variability of Silver Fir (*Abies alba* Mill.) in Albania<sup>§</sup>

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Z. Naturforsch. **56c**, 531–539 (2001); received January 9/March 5, 2001

*Abies alba*, Oleoresin, Terpenes

Terpene composition of needle and cortical oleoresin from lateral shoots were analyzed by GC/MS for four Silver fir (*Abies alba* Mill.) populations scattered in natural species range in Albania. More than sixty compounds were detected in the needle oleoresin, which was characterized by a high content of  $\alpha$ -pinene, camphene,  $\beta$ -pinene, limonene and bornyl acetate. Three monoterpenes,  $\alpha$ -pinene,  $\beta$ -pinene and limonene, and two sesquiterpenes,  $\beta$ -caryophyllene and germacrene D, comprised the majority of cortical oleoresin. The terpene composition differences among the populations that led to the recognition of two chemotypes. The needle oleoresin from the provinces of Puka, Bulqiza and Llogara were characterised by high amounts of  $\beta$ -pinene, camphene and  $\alpha$ -pinene and low amounts of limonene, while that from Drenova had high amounts of  $\beta$ -pinene and limonene. A similar pattern was found in the cortical oleoresin with the exception of camphene that was a minor contributor. Geographical and seasonal variation between the populations was, also, investigated. Multivariate analysis of both needle and cortical oleoresin separated Drenova (southeastern population) from the other sites. When both major monoterpenes and sesquiterpenes were considered four chemical profiles could be attributed. Based on their chemical profiles, the populations can be divided into two groups:

- Populations with high content of  $\beta$ -pinene and  $\alpha$ -pinene but a low content of limonene (Puka, Bulqiza and Llogara), typical of most of *A. alba* populations in all its distribution range.
- Population with a high content of limonene and a moderate content of  $\beta$ -pinene and  $\alpha$ -pinene (Drenova).