

UV-B Exposure of Indoor-Grown *Picea abies* Seedlings Causes an Epigenetic Effect and Selective Emission of Terpenes

Anna B. Ohlsson^{a,*}, Patrik Segerfeldt^{a,b}, Anders Lindström^c,
Anna-Karin Borg-Karlson^{b,d}, and Torkel Berglund^a

^a KTH, Royal Institute of Technology, School of Biotechnology,
Department of Biochemistry, AlbaNova University Center, SE-106 91 Stockholm,
Sweden. Fax: +46-8-55378468. E-mail: annao@biotech.kth.se

^b KTH, Royal Institute of Technology, School of Chemical Science and Engineering,
Department of Chemistry, Ecological Chemistry Group, SE-100 44 Stockholm, Sweden

^c Dalarna University, School of Technology and Business Studies,
SE-791 88 Falun, Sweden

^d Tartu University, Institute of Technology, Tartu, Estonia

* Author for correspondence and reprint requests

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Terpenoids are involved in various defensive functions in plants, especially conifers. Epigenetic mechanisms, for example DNA methylation, can influence plant defence systems. The purpose of the present study was to investigate the influence of UV-B exposure on the release of terpenoids from spruce seedlings and on needle DNA methylation. Ten-week-old seedlings grown indoors were exposed to UV-B radiation during 4 h, and the volatile compounds emitted from the seedlings were analysed. Analysis of the volatiles 1, 3, and 22 d after this UV-B exposure showed that bornyl acetate, borneol, myrcene, and limonene contents increased during the first 3 days, while at day 22 the level of emission had returned to the control level. UV-B exposure decreased the level of DNA methylation in needles of young seedlings, reflected in methylation changes in CCGG sequences. Exposure of young seedlings to UV-B radiation might be a way to potentiate the general defensive capacity, improving their ability to survive in outdoor conditions. UV-B-induced defence is discussed in the light of epigenetic mechanisms.

Key words: Defence, DNA Methylation, Volatiles