



## Diterpenoids from *Pinus cembra* isolated by HPLCC and HSCCC assisted by APCI-MS profiling

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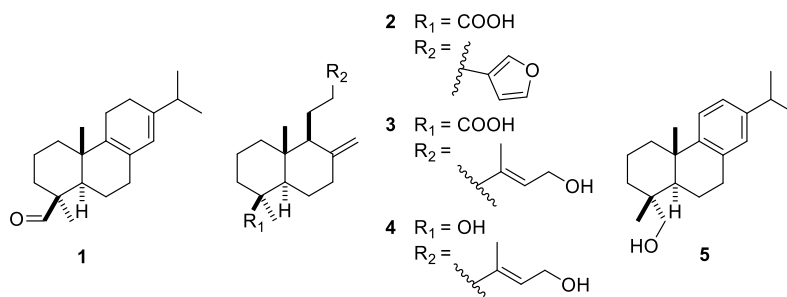
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*Pinus cembra*, commonly known as Swiss stone pine, is an emblematic alpine conifer with ecological importance and a rich repertoire of secondary metabolites. While its seeds and essential oils are well documented, the chemical profile of cone scales has remained largely unexplored. In this work, air-dried cone scales (675 g) were extracted with *n*-hexane and yielded 8 g of crude extract. 650 mg of the hexane extract was fractionated using reversed-phase High-Performance Countercurrent Chromatography (HPCCC) with a *n*-hexane/ACN (1:1, v/v). 2 g of the same hexane extract was also fractionated with reversed-phase High-Speed Countercurrent Chromatography (HSCCC) with *n*-hexane/ACN/TBME (46:46:6, v/v/v). APCI-MS off-line injection profiling of HSCCC fractions enabled targeted tracking of diterpenoid-rich zones, improving fraction selection and structural assignment [1]. Subsequent purification by silica gel and RP-18 column chromatography afforded subfractions of high purity. Structure elucidation was carried out using NMR spectroscopy in combination with APCI-MS/MS fragmentation patterns. This workflow led to the isolation of five abietane diterpenoids: palustral (**1**), lambertianic acid (**2**), isocupressic acid (**3**), agathadiol (**4**), and 4-*epi*-dehydroabietol (**5**). This is the first time <sup>13</sup>C NMR and MS data for palustral (**1**) shall be published. The findings not only contribute to chemophenetic understanding of *Pinus* genus but also open perspectives for potential bioactivity investigation from the isolated compounds.



**Keywords:** *Pinus cembra*, diterpenes, countercurrent chromatography, APCI-MS profiling, palustral

[1] Präßler *et al.*, *J. Chromatogr. A*, 2025