

# Sesquiterpenes of the Geosmin-Producing Cyanobacterium *Calothrix* PCC 7507 and their Toxicity to Invertebrates

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The occurrence of sesquiterpenes was investigated with the geosmin-producing cyanobacterium *Calothrix* PCC 7507. The essential oil obtained by vacuum distillation was studied in more detail by GC-MS methods and superposition with authentic compounds. Geosmin was the dominating compound while the other sesquiterpenes were minor components. Sesquiterpenes that have not been described before in cyanobacteria were isodihydroagarofuran, eremophilone and 6,11-epoxyisodaucane. Closed-loop stripping analysis revealed that most of the sesquiterpenes were found in the biomass of *Calothrix*, while eremophilone was mainly observed in the medium of the axenic culture. Eremophilone showed acute toxicity (LC<sub>50</sub>) against *Chironomus riparius* (insecta) at 29  $\mu\text{M}$  and against *Thamnocephalus platyurus* (crustacea) at 22  $\mu\text{M}$ . The compound was not toxic for *Plectus cirratus* (nematoda). 6,11-Epoxyisodaucane and isodihydroagarofuran exhibited no toxicity to invertebrates when applied in concentrations up to 100  $\mu\text{M}$ .

**Key words:** Sesquiterpenes, Isodihydroagarofuran, Cyanobacterium, Insecticide