

DSL 1: Cyanobacterial production of indole-3-acetic acid for use in agriculture

Mathias Rupf

Gesellschaft zur Förderung von Medizin-, Bio- und Umwelttechnologien e. V. (GMBU),
Erich-Neuß-Weg 5, D-06120 Halle (Saale), Germany, e-mail: rupf@gmbu.de



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Cyanobacteria or blue-green algae belong to the most primitive forms of life, yet they are of tremendous importance in many aquatic and terrestrial ecosystems. Besides marine and freshwater environments, cyanobacteria are common in the rhizosphere as well as epiphytes and symbionts.

Studies on the effects of cyanobacterial extracts and culture filtrates on the growth of different plants indicated the presence of phytohormones or phytohormon-like substances in some cyanobacteria strains. Finally, definite proof of auxins produced by cyanobacteria was provided by modern chromatographic methods combined with mass spectrometry.

The GMBU e.V. examined in cooperation with the Dr. Junghanns GmbH the potential of a free living, freshwater cyanobacterium to produce the phytohormone indole-3-acetic acid (IAA). To achieve this, crucial culture parameters influencing the IAA production were investigated. Based on these experiments a suitable cultivation process was developed in order to produce cyanobacterial biomass with a high content of IAA. Finally, the auxin-rich biomass was used to produce a plant growth stimulating formulation especially for applications in organic farming.