B129 Semiquantitative detection of antialgal activities in a TLC plate based bioassay

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The aim of our efforts was to develop a test system for the detection of cyanobacterial growth inhibitors extracted from microalgal culture media.
The separation of the complex composed culture media extracts was done by TLC. To simplify the screening on substances with antialgal activity, different alive microalgae were sprayed directly onto the TLC plates. Within 1-2 days active compounds led to significant zones of inhibition clearly recognizable in the removement of the green colour of the alga.
We found several unicellular and filamentous cyanobacteria being suitable as test organisms, namely *Chroococcus minutus*, *Nostoc carneum*, *Nostoc insulare*, *Spirulina laxissima*, *Synechocystis aquatilis* and a *Synechococcus* species. Conditions for suitability were sensitivity against active compounds and usability of the microalgal suspension as spray reagent.
When different concentrations of one culture media extract were tested, differences in the zones of inhibition (clearness and diameter) resulted dependend on substance concentration. Therefore this assay is suitable for semiquantitative rating of the concentration or activity of separated substances in complex composed extracts.

B130 A simple method to increase the yield of phycobiliproteins in cultures of cyanobacteria

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Cyanobacteria are well known as a source of different natural products such as (polyansaturated) fatty acids, vitamins, proteins and phycobiliproteins (PBPs). PBPs (a special group of photosynthetic pigments) are of commercial interest, because they can be used as natural dyes in food, drug and cosmetic industries replacing synthetic pigments, as highly sensitive fluorescent reagents in diagnostic tests, bioassays and others (1).
The production of PBPs in cyanobacteria depends on the cultivation conditions of the microalgae, especially on the nitrogen content of the medium and the light intensity (2).
The aim of our studies was to create a simple cultivation method, which led to higher amounts of PBPs in cultures of cyanobacteria.
Cultivation of cyanobacteria in closed systems under conditions developed for optimal growth led to high amounts of biomass but low percentage of PBPs. To increase the yield of PBPs in these cultures, a special treatment was developed based on the knowledge of the dependence of PBP production on specific cultivation conditions: Addition of nitrogen (+ 0.025% KNO_3) and transfer of the culture into complete darkness, both some hours before harvesting the culture. This simple treatment resulted in an increase of PBP-content in the range of 15-50% which was achieved within 8-16 hours.

References: 1. Becker, E.W. (1994) Microalgae – Biotechnology and Microbiology. Cambridge Studies in Biotechnology 10. Cambridge University Press. **2.** Volk, R.-B. (1996) Dissertation. University of Kiel, Germany.