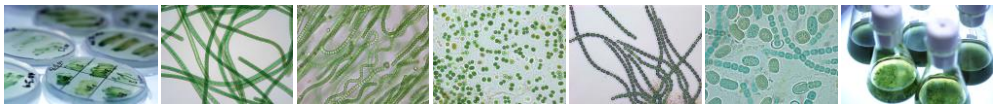


Cyanobacterial Crude Extracts

96 well microtiter plates

Introduction

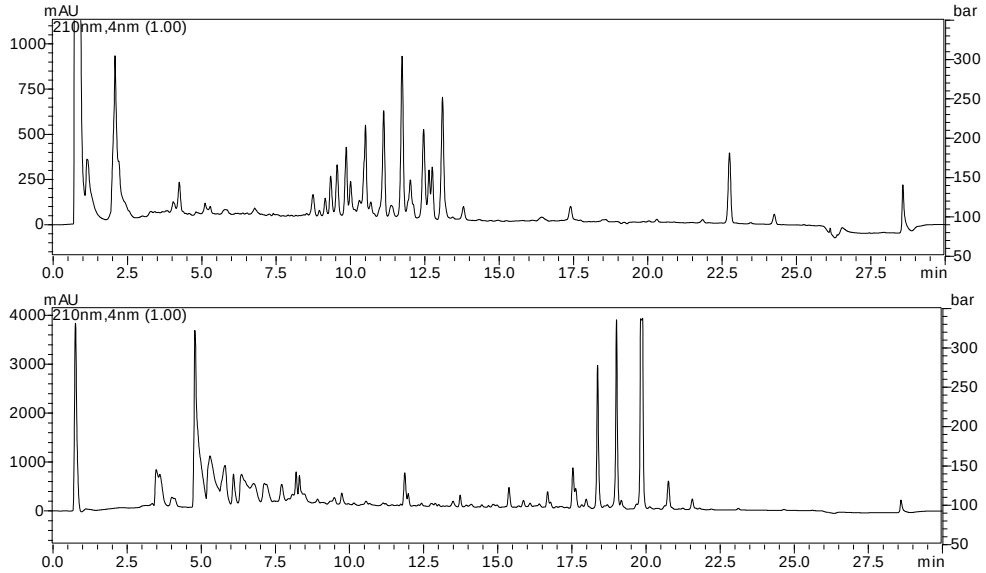
Cyanobacteria are well known to produce unique, structurally diverse, and potently bioactive secondary metabolites.[1-4] Despite the fact that their potential for natural product production nowadays is acknowledged, they are still an untapped source. This results in a remarkably low rediscovery rate and makes cyanobacteria an attractive source for novel secondary metabolites.

Cyano Biotech has screened its extensive cyanobacteria strain collection using HPLC/MS/DAD/ELSD. We have selected productive strains for upscaling to generate cyanobacteria biomass and medium extracts. Each extract has been analysed by HPLC/DAD/HRMS^2, resulting in a high quality screening library of cyanobacterial crude extracts.

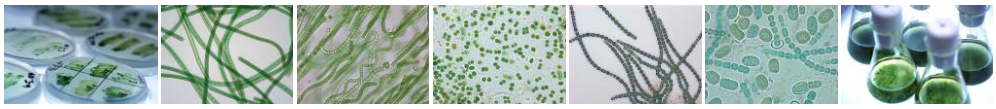
Features of the library

- Hand-picked cyanobacteria strains specially selected for a large number of chemically diverse compounds; strains are cryopreserved and sufficient biomass has been harvested to ensure immediate resupply
- Standardized extraction protocol enabling the recovery of secondary metabolites ranging from high hydrophilicity to intermediate hydrophobicity
- HPLC/DAD/HRMS^2 data available for all extracts, ensuring rapid follow up of hits

The amount of extract located in each well of the microtiter plate depends on our customer's needs.



Sample chromatograms of a *Nostoc* biomass (upper) and a *Nostoc* medium extract (lower chromatogram)



Storage and use of the library

The microtiter plates can be shipped at room temperature but should be stored at or below 4°C until reconstituted. Reconstitution of the extracts in the wells should be performed either in neat DMSO or in a DMSO/water/buffer solution as appropriate.

If reconstituted in DMSO: Store below -20 C. Use within 1 year. Repeated freeze-thawing might result in precipitation of some material and should be avoided if possible.
If reconstituted in DMSO/water or DMSO/buffer: Store at 4 C. Use within 2 weeks.

Cyanobacterial secondary metabolites have an average weight of about 650 g/mol. It might be appropriate to consider the average weight when calculating the final assay concentration.

Hit follow-up

Following screening of the library the customer should contact Cyano Biotech to follow up hits. This can include dereplication of known compounds, fractionation of the extracts, isolation and structure elucidation of active compounds, compound diversification and optimization, strain development towards the customer's specific needs, and resupply of compounds. These services are provided in close coordination with the customer.

Safety

This product contains cell free fractions from cyanobacteria strains isolated from diverse environments and localities. The samples contain uncharacterized chemicals and therefore should be treated as potentially hazardous.
Always wear personal protective equipment (laboratory gown, safety glasses, and gloves) and dispose unused material as laboratory waste.

[1] Timo Niedermeyer and Mark Brönstrup. 2012. Natural product drug discovery from microalgae. In: *Microalgal Biotechnology: Integration and Economy*, ed. Clemens Posten and Christian Walter, 169-202. De Gruyter.

[2] Rahul Kunwar Singh, Shree Prakash Tiwari, Ashwani K Rai, and Tribhuban M Mohapatra. 2011. Cyanobacteria: an emerging source for drug discovery. *The Journal of Antibiotics* 64: 401-412.

[3] Kevin Tidgewell, Benjamin R Clark, and William H Gerwick. 2010. The Natural Products Chemistry of Cyanobacteria. In: *Comprehensive Natural Products II: Chemistry and Biology*, ed. Lewis Mander and Hung-Wen Liu, 141-188. Elsevier.

[4] Heike Sielaff, Guntram Christiansen, and Torsten Schwecke. 2006. Natural products from cyanobacteria: Exploiting a new source for drug discovery. IDrugs 9: 119-127.