Data Descriptor

Cyanobacterial and Algal Strains in the Culture Collection of Baltic Algae (CCBA)

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Abstract

The dataset titled Microalgal strains from "Culture Collection of Baltic Algae (CCBA)" is a representation of cyanobacterial and microalgal cultures isolated from the Baltic Sea. It is a unique catalogue of strains of the dominant and rare species found in the Baltic phytoplankton and microphytobenthos assemblages. The main purpose of the collection is to extend the knowledge on the Baltic microbial communities by providing high quality material for research, education and commercial ventures. The increasing interest of the biotechnological industry in marine biological resources makes microalgal strain collection an important provider of resource material for future technological developments.

Keywords: Baltic, microalgae, culture collections

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Specification table (data records)

Subject area	culture collections, microalgae, cyanobacteria
More specific subject area	Cyanobacterial and microalgal strains isolated from the Baltic Sea
Type of data	Text and micrographs
How the data was acquired	The data were collected during routine activities in the collection
Data format	The table is in .xlsx format; micrographs are in .jpg and .tif formats
Measurement Type	Taxonomic inventory
Design Type(s)	Data integration objective, database creation objective

Data source location	MOST Wiedzy Open Research Catalog, Gdańsk University of Technology, Gdańsk, Poland
Data accessibility	The dataset is accessible for any research, educational and commercial purposes under CC BY licence

Background

The dataset contains information on the cyanobacterial and microalgal strains maintained at the Culture Collection of Baltic Algae (CCBA) at the Institute of Oceanography UG. The collection maintains cyanobacterial and algal strains isolated from the Baltic Sea and additionally several strains collected from a wide range of habitats. The culture collection specialises in the Polish region and conducts continuous enlargement of the resources by the addition of new isolates. The cultures are unialgal, but mostly non-axenic. The strains are available for research, educational and commercial purposes. The main research objectives of the collection include: (1) isolation of new strains from Baltic and Polish inland waters with special attention paid to algal species threatened by extinction, rare, harmful as well as typical of the Polish region, (2) extension of the knowledge on algal biodiversity, and (3) investigation of different environmental factors to determine the optimal conditions for algal growth. With the increasing interest in microalgal biomass as a high-quality resource material for biotechnology, the role of culture collections is increasing. Therefore, sharing information on the microalgal resources has become an important task allowing for the development of new eco-friendly technologies in various commercial sectors.

Methods

Water and sediment samples were collected using a plankton net and sediment corer. Subsequently, cyanobacteria and microalgal strains were isolated with standard microbiological isolation techniques, including: serial dilution, plating and by using a micromanipulator. The strains were grown in f/2 and BG-11 media which were specifically designated for marine microalgae and cyanobacteria, respectively. Stable unialgal cultures were then included into collection resources and subjected to microscopic analysis. The strains were identified based on their morphological features and micrographs were taken. Strains of special interest were also investigated using molecular biology tools and data on their genetic diversity was collected (i.e., by generating their 18S rDNA and ITS sequences).

Data records

The collection contains 86 original strains, both planktonic and benthic. They represent the diversity of both community types. They are maintained as unialgal, non-axenic strains in liquid media prepared using natural Baltic water. They are kept under constant culturing conditions, i.e. low light of 50 mmol of photons m-2 s-1 and a temperature of

18˚C, ensuring their stable growth. The strains maintained in the CCBA collection cover various taxonomical groups, including: cyanobacteria, diatoms and green algae.

The dataset provides: (1) basic information on the year and location of hte environmental samples from which the strains were isolated, and their culturing conditions, (2) strain taxonomic affiliations, and (3) information on available genetic data. The dataset was prepared in agreement with the Darwin Core standard. The taxonomic coverage presented in the dataset is shown in Fig. 18.1.

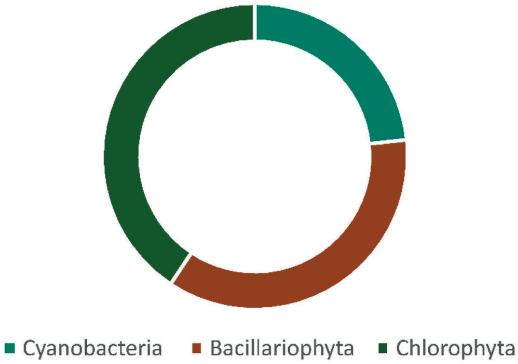

Fig. 18.1. Taxonomic content of the dataset

Data quality and availability

The data included in the dataset was not processed in any way (raw data). The data quality of the dataset was consulted with taxonomic authorities.

Dataset DOI
10.34808/6myr-f916

Dataset License
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References

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