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Polysaccharides Extracellular  
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# Diatom Polysaccharides Extracellular Production

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## **Diatom Polysaccharides Extracellular Production**

The extracellular polysaccharide production by marine diatoms is a significant route by which photosynthetically produced organic carbon enters the trophic web and may influence the physical environment in the sea as observed for example when massive aggregation events on basin scale occur.

## **Diatom Polysaccharides: Extracellular Production ...**

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## **Diatom Polysaccharides Extracellular Production**

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## **Diatom Polysaccharides Extracellular Production**

Diatoms, important marine photoautotrophic protists that account for up to 25% of the primary production

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on Earth , produce large quantities of extracellular polymeric substances (EPS), consisting predominantly of polysaccharides . Diatom extracellular polymers participate in various processes, both at the cellular level and in the environment.

## **Marine Polysaccharide Networks and Diatoms at the ...**

The effects of phosphate (P) limitation, varying salinity (5-65 psu), and solid media growth conditions on the polysaccharides produced by the model diatom, *Phaeodactylum tricornutum* Bohlin were determined. Sequential extraction was used to separate polymers into colloidal (CL), colloidal extracellular polymeric substances (cEPS), hot water soluble (HW), hot bicarbonate soluble (HB), and hot ...

## **EXTRACELLULAR MATRIX ASSEMBLY IN DIATOMS ...**

The extracellular polysaccharide production by marine diatoms is a

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significant route by which photosynthetically produced organic carbon enters the trophic web and may influence the physical environment in the sea as observed for example when massive aggregation

## **Diatom Polysaccharides Extracellular Production**

The production of low and high molecular weight extracellular carbohydrates in axenic cultures of five species of benthic estuarine diatoms, *Cylindrotheca closterium* (Ehrenberg), *Navicula perminuta* (Grun.) in Van Heurck, *Nitzschia frustulum* (Kütz.) Grunow, *Nitzschia sigma* (Kütz.) Grunow, and *Surirella ovata* (Kütz.)

## **The production of extracellular carbohydrates by estuarine ...**

Diatom exopolysaccharides (EPS) are bioactive components released into the environment. As an important component of marine phytoplankton, diatoms produce up to a quarter of the

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## **(PDF) Diatom Exopolysaccharides: a Review**

Extracellular polysaccharides (EPSs) produced by microalgae and cyanobacteria are molecules with a great ecological significance for the producing organisms, serving in a wide array of biological processes and increasing the organism tolerance to environmental stresses.

## **Exocellular Polysaccharides in Microalgae and ...**

A laboratory study was performed on the extracellular production of carbohydrates by the marine diatoms *Cylindrotheca closterium*, *Thalassiosira pseudonana* and *Skeletonema costatum*. The investigation was aimed at elucidating the role of P-starvation and growth status on abundance and chemical characteristics of the released non-attached polysaccharides.

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## **Extracellular carbohydrates released by the marine diatoms ...**

Extracellular production by 'healthy' cells contained 33% polysaccharides, 15% monosaccharides and 5% free amino acids (as C). The composition of the extracellular amino acids differed from the...

## **(PDF) Cellular and extracellular production of ...**

Diatom algae especially benthic diatoms have a symbiotic relationship with bacteria forming diatom bacterial biofilms, during the process many diatoms produce extracellular polysaccharides (EPS) which facilitates in metal ion adhesion to cell wall (Amin et al., 2012, Koedooder et al., 2018). Silica frustule of diatoms is formed by crystalline aluminum silicates of tetrahedral structure sharing oxygen atoms.

## **Diatom mediated heavy metal remediation: A review ...**

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The cellulose synthesis inhibitor 2,6-dichlorobenzonitrile (DCB) and the DCB analogs 2-chloro-6-fluorobenzonitrile, 3-amino-2,6-dichlorobenzonitrile, and 5-dimethylamino-naphthalene-1-sulfonyl-(3-cyano-2,4-dichloro)aniline (DCBF) inhibited extracellular adhesive production in the marine diatom *Achnanthes longipes*, resulting in a loss of motility and a lack of permanent adhesion.

### **Extracellular Matrix Assembly in Diatoms ...**

The extracellular polysaccharides of benthic diatoms are commonly composed of rhamnose, fucose, xylose, mannose, galactose, glucose, and other monomers; galactose and glucose often form the major part (10, 12, 43, 45). These sugar monomers are also found in natural biofilms dominated by diatoms (7, 41).

### **Bacteria Associated with Benthic**



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### **Diatoms from Lake ...**

Extracellular adhesives from the diatoms *Achnanthes longipes*, *Amphora coffeaeformis*, *Cymbella cistula*, and *Cymbella mexicana* were characterized by monosaccharide and methylation analysis, lectin-fluorescein isothiocyanate localization, and cytochemical staining. Polysaccharide was the major componen ...

### **Extracellular Matrix Assembly in Diatoms ...**

Diatoms secrete a significant amount of polysaccharides, which can serve as a critical organic carbon source for bacteria. The 2010 Deepwater Horizon oil spill exposed the Gulf of Mexico to substantial amounts of oil that also impacted the phytoplankton community. Increased production of exopolymeric substances was observed after this oil spill.

### **Role of Polysaccharides in Diatom *Thalassiosira pseudonana* ...**

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The extracellular production of carbohydrates in the pH range 6-5-8-5 was only 3-7% (average) of total C production and increased at pH 9-0 and 9-4. The decrease in growth rate at pH"9-0 might be caused by a decrease in the rate of some important biochemical reactions, as well as by a change in cell membrane properties in this

## **The effect of pH on growth rate, biochemical composition ...**

Extracellular polysaccharide or exopolysaccharide (EPS) is a group of polysaccharide substances generated from secondary metabolic processes within algae, excreted under normal as well as under unfavorable conditions (De Jesus Raposo et al. 2013; Ates 2015). EPS may contain xylose, galactose, or glucose.

## **Sulfated exopolysaccharide production and nutrient removal ...** extracellular polysaccharide production

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by diatoms is a significant route by which photosynthetically produced organic carbon enters the trophic web and may influence the physical environment in the sea. Specifically, species of diatoms in the northern Adriatic Sea can produce large amounts, up to 50 g/m<sup>3</sup>

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