

災害・SDGs

2026年7月18日(土) 16:50 ~ 18:20 | 口演会場2(保健学科302)

災害・SDGs

座長:Dorkasi Mwakawanga

18:05 ~ 18:20

[w5gNzYeC-06] Innovative use of algae in bioplastic production

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キーワード : Microalgae、Spirulina、Bioplastic、Chlorella、ordinary plastic、macroalgae

[Purpose]The high awareness of the synthetic plastics pollution problem demands more efforts by the scientific community to find an alternative source (bioplastics) to protect our environment and health too.

[Method]

. The production source of bioplastics should be plant-based raw materials, and natural polymers like carbohydrates, protein, and others (fatty acids, sugar, disaccharides, etc.). Polyhydroxy butrate (PHB), Polyhydroxy alkanoates (PHA), and starch are the basic compounds produced by algae that enter bioplastic composition.

[Results]

The most common algal species used in bioplastics production are *Ulva lactuca* and *Gelidium sesquipedale* from macroalgae plus *Chlorella* and *Spirulina* from microalgae. The seaweeds are collected naturally or cultivated while microalgae need cultivation to obtain a high biomass. The most accepted common systems are the open system (raceway) and the closed photobioreactors. The present techniques for microalgal bio composite include melt mixing, compression molding, hot molding, injection molding, twin screw extrusion and solvent casting.

[Consideration]

Although algal bioplastics are promising on a laboratory scale large scale faces some challenges including species selection, polymer selection depending on biodegradability, and released products from bioplastic degradation

[Conclusion]Bioplastics have become essential in various industrial applications such as horticulture, composting bags, hygiene, biomedical, structural, electrical, and other consumer products.