Glycolipid Production by *Dacryopinax spathularia*

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Abstract

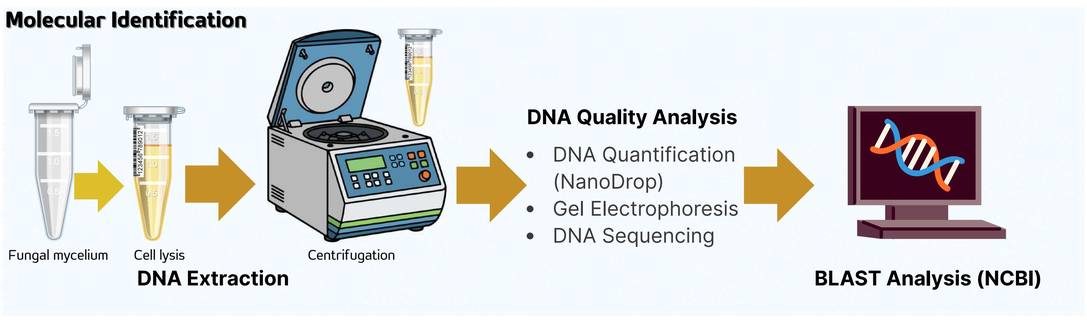
Glycolipids are biosurfactants that have attracted considerable interest due to their safety, biodegradability,and environmental compatibility. However, information on glycolipid production from jelly fungi in the class Dacrymycetes remains limited. This study aimed to isolate pure cultures, identify species, and evaluate the glycolipid-producing potential of jelly fungi in the genus *Dacryopinax*. Two gelatinous fruiting bodies (HKA and WB3), yellow to dark orange in color, were collected from decaying wood. The isolates were identified and classified based on morphological characteristics and molecular analysis. The isolates were cultivated in liquid media on a rotary shaker to increase biomass, and the inoculum was prepared from the culture that produced the highest dry weight. The fungi were then grown in liquid media containing different carbon sources under shaking conditions to evaluate growth and glycolipid production. Future procedures will involve glycolipid extraction, analysis by thin-layer chromatography (TLC) using an appropriate solvent system with a MEL-A standard, and assessment of biosurfactant activity using the drop-collapsing test.

Introduction

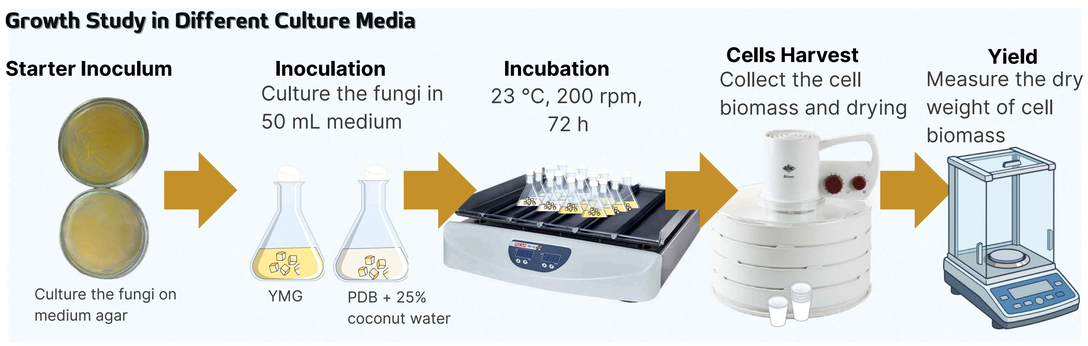
Glycolipids are biosurfactants composed of carbohydrate and lipid moieties that exhibit surface-active properties. Due to their biodegradability, low toxicity, and environmental compatibility, they have gained considerable attention for applications in the food, pharmaceutical, cosmetic, and environmental industries. Various microorganisms, particularly yeasts and filamentous fungi, have been reported to produce glycolipids. However, information regarding glycolipid production from jelly fungi in the class Dacrymycetes remains limited. *Dacryopinax spathularia*, a jelly fungus commonly found on decaying wood in tropical regions, has been reported to produce various bioactive compounds. Therefore, this study aimed to investigate the growth of *D. spathularia* in different culture media to evaluate its potential for glycolipid production.

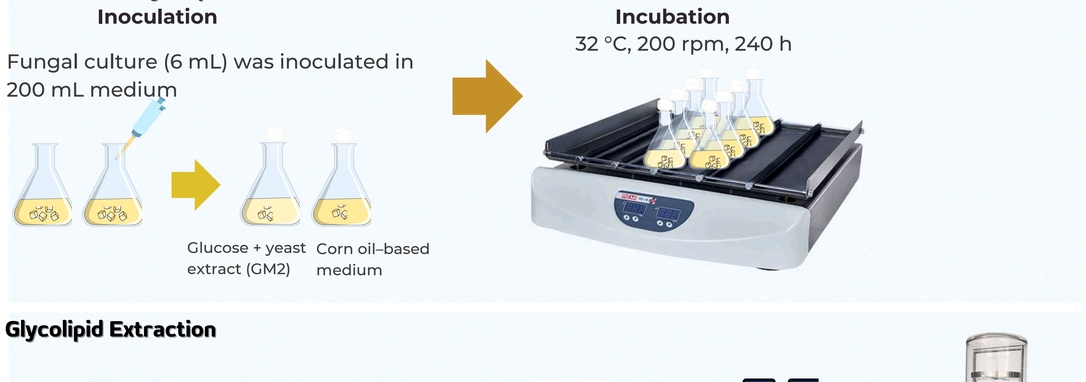
Methodology

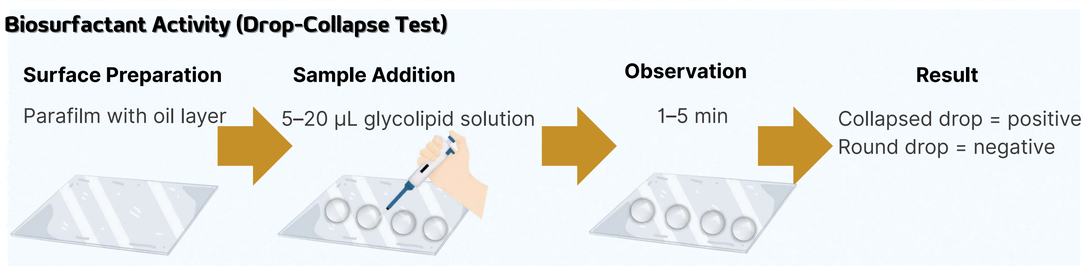
Identification of Dacrymycetes Species



Growth and Glycolipid Production of Dacrymycetes







Objectives

- To isolate and identify fungi belonging to the class Dacrymycetes.
- To evaluate the growth and glycolipid production of the isolated Dacrymycetes fungi.

Results

Identification of Dacrymycetes Species

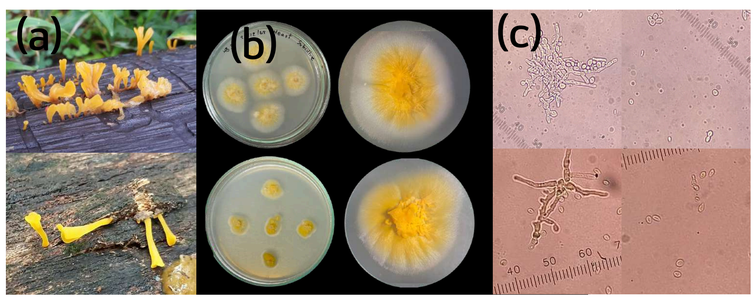


Figure 1 : Morphological characteristics of *Dacryopinax spathularia.*
a) Fruiting bodies with a spathulate form growing on decayed wood.
b) Colony morphology on PDA supplemented with malt extract.
c) Microscopic observation showing hypha structures and unicellular yeast-like cells.

Isolate	Closest species	Accession No.	Query coverage	Identity	E-value
WB3	*Dacryopinax spathularia*	ON705686.1	88%	99.67%	0.0

Table 1 : Top BLASTN matches of the LSU rRNA gene sequence of isolate WB3 retrieved from the NCBI database.

Growth and Glycolipid Production of Dacrymycetes

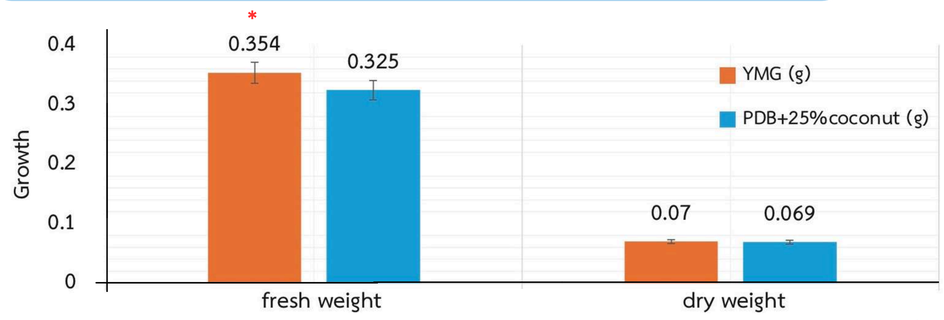


Figure 2 : Growth of *Dacryopinax spathularia* HKA in YMG and PDB media supplemented with 25% coconut (*$p \leqslant 0.05$).

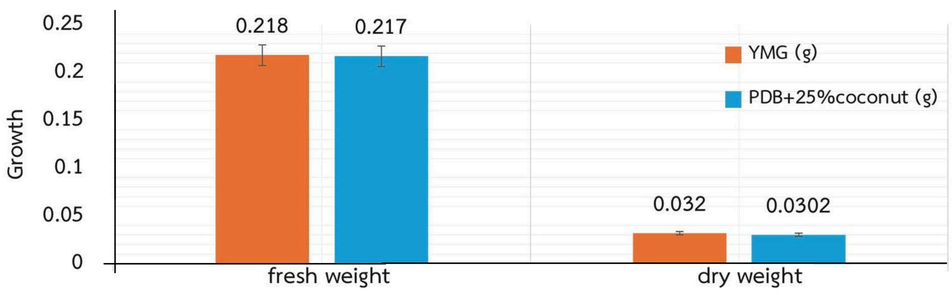


Figure 3 : Growth of *Dacryopinax spathularia* WB3 in YMG and PDB media supplemented with 25% coconut ($p \leqslant 0.05$).

Conclusion

- Molecular analysis confirmed the isolates as *Dacryopinax spathularia.*
- YMG medium produced higher fungal biomass than PDB with 25% coconut water.

Acknowledgements

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References

- Desai, J. D., & Banat, I. M. (1997). Microbial production of surfactants and their commercial potential. Microbiology and Molecular Biology Reviews, 61, 47–64.
- Kitamoto, D., Isoda, H., & Nakahara, T. (2002). Functions and potential applications of glycolipid biosurfactants–from energy-saving materials to gene delivery carriers. Journal of Bioscience and Bioengineering, 94, 187–201.
- Gardes, M., & Bruns, T. D. (1993). ITS primers with enhanced specificity for basidiomycetes–application to the identification of mycorrhizae and rusts. Molecular Ecology, 2, 113–118.