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original scientific paper

**Optimization of Culture Conditions for Lichen
Usnea ghattensis G. Awasthi to Increase Biomass
and Antioxidant Metabolite Production**

Bhaskar C. Behera, Neeraj Verma, Anjali Sonone and Urmila Makhija*

**Plant Science Division, Agharkar Research Institute,
G.G. Agarkar Road, IN-411004 Pune, India**

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Summary

The aim of this study is to optimize the culture conditions for lichen *Usnea ghattensis* G. Awasthi in order to increase biomass and antioxidant metabolite production. The cultured lichen consisted of usnic acid produced by mycobionts and photobionts after 2 to 3 months of inoculation. Cultures grown in the media with excess carbon sources showed significant increment in the biomass growth, usnic acid production and total polyphenol mass fraction after six months of inoculation. The methanol extract of six-month-old cultures grown in the malt-yeast extract (MYE) medium containing 0.01 mol/L of sucrose and 0.01 mol/L of

polyethylene glycol showed a significantly high inhibition of lipid peroxidation activity up to 89 %. A significant correlation ($R^2=0.89$) of $p<0.01$ was also found between total polyphenol mass fraction and the inhibition of lipid peroxidation in this lichen species.

Key words: lichen, usnic acid, lipid peroxidation

*Corresponding author: E-mail: bcbehera2002@yahoo.co.in

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