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Chemical stressors increase polysaccharide secretion in *Lentinus squarrosulus*Anike F N¹, Isikhuemhen O S¹, Obinyan B² and Okhuoya J A²¹North Carolina A&T State University, USA²University of Benin, Nigeria

Introduction: *Lentinus squarrosulus* is a seasonal mushroom consumed by millions of people. Beyond nutritive factors, *L. squarrosulus* elicit medicinal benefits through its polysaccharide content. While attempts at domestication and mass production of *L. squarrosulus* (on going) is one way to increase polysaccharide output, mechanisms that increase polysaccharide secretion *in vitro* is an attractive alternative both for process optimization and product recovery. The study evaluated the effectiveness of chemical stressors such as acidity and sodium chloride in increasing polysaccharide secretion in *L. squarrosulus*.

Methodology: *L. squarrosulus* was cultured in submerged fermentation under different concentrations of sodium chloride (0.5, 1, and 2 g/l) and pH levels (3, 4, 5, 6, 7, 8, and 9) including their controls. The basal medium was composed of soluble starch (10 g/L), Dextrose (5 g/L) and yeast extract (2 g/L). Five (5) replicates of each medium were inoculated with 5 mm agar blocks from 3-day old *L. squarrosulus* culture and incubated at 28°C for 14 days. Mycelia were harvested by filtration and polysaccharide precipitated from supernatant in 3 volume ethanol overnight, centrifuged, dried and weighed.

Result: The two chemical stressors increased secretion of polysaccharides in *L. squarrosulus* tremendously compared to non-stressed cultures. Acidic pH was more favorable to polysaccharide secretion than alkaline pH. Highest polysaccharide (0.026g) was detected in pH 3 and least (0.01g) in pH 6-9. Low sodium chloride concentration (0.5 g/L) resulted in more polysaccharide secretion while higher salt concentrations (2 and 3 g/L) inhibited growth completely. Acidic medium was more effective in inducing polysaccharide than low salt medium (0.26 g vs 0.2 g).

Conclusion: Chemical stress using sodium chloride and acidic pH induced higher polysaccharide secretion in *L. squarrosulus*. The method could be optimized and adapted for commercial production of *L. squarrosulus* polysaccharide.

Biography

Anike F N is an experienced Researcher and Educator with expertise in mushroom and fungal biotechnology. She conducts research and trains students in this field of study, authored and co-authored many peer reviewed journals and publications.

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