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Mannosylerythritol lipids production by *Pseudozyma aphidis* UFMG-Y3468: A process optimization approach

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Statement of the Problem: Yeasts from Ustilaginaceae family have been highlighted in the last years as a promising source of industrial interesting compounds, including enzymes, sugars, lipids, organic acids and glycolipids biosurfactants. Among the biosurfactants produced by these yeasts, the mannosylerythritol lipids (MELs) have been attracted the attention of the scientific community in recent years due to its potential applications in several fields including medical, cosmetics and food. Considering the high costs associated with the production of biosurfactants, this work focused on the use of response surface methodology (RSM) to optimize the carbon and nitrogen sources in the medium for the production of MELs by a *Pseudozyma aphidis* strain isolated from Brazilian water sample.

Methodology & Theoretical Orientation: After a screening study, one strain of yeast belonging to the *Pseudozyma* genus showed able to produce MEL in mineral medium with glucose. A central composite design (24), 28 experiments, was used for optimization of glucose, soybean oil, yeast extract and sodium nitrate concentrations in mineral medium applied for production of MELs by *P. aphidis* UFMG-Y3468. The process was carried in a controlled incubator at 30°C and 200rpm for 10 days.

Findings: The production of crude MEL extract ranged of 5,87g/L to 27,25g/L and the mathematical model obtained with significative parameters (soybean oil, glucose and yeast extract) showed good results after analysis of variance. In addition, after the chemical characterization using high-resolution mass spectrometry and nuclear magnetic resonance was observed the presence of MEL-A, MEL-B, MEL-C.

Conclusion & Significance: The use of RSM for optimization of MEL production can be considered an important tool to reduce of costs of medium composition applied in the biotechnological processes. This approach can be considered promising since it allowed to find the optimum concentration levels of the substrates used for MEL production.

Biography

Glaucia M Pastore, Full Professor, Department of Food Science, Faculty of Food Engineering, Campinas University, UNICA Bachelor of Biological Science, Catholic University of Campinas (1976) MS in Food Science, Campinas University-Unicamp (1982), Enzyme Technology Course Osaka Technical Institute Japan (1985), PhD in Food Biochemistry, Campinas State University-Unicamp (1991), Post-doctorate: Ohio State University USA, 1993. Responsible for graduate and undergraduate courses in Food Biochemistry and Principes of Food Biotechnology, Biotransformation of Agriculture wastes. Author of several chapters in international and national books, more than 100 research papers in international journals.

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