

Microbial conversion of plant based polyunsaturated fatty acid (PUFA) to long chain PUFA and its identification by gas chromatography

Shilpa Deshpande, Snehal Alone and N. J. Duragkar

Sharad Pawar College of Pharmacy, India

Omega-3-fatty acids are essential fatty acids necessary for various human health aspects. Humans can get alpha-linolenic acid (ALA) from plants and can convert to LCPUFAs, but to very less extent. LCPUFAs can be obtained only from fish oil which is not acceptable by vegetarian population. Hence, there is a need of an alternative process for LCPUFA production either from microorganisms or by biological engineering method using plant oil containing ALA. To avoid conversion of linoleic acid to arachidonic acid, ALA can be isolated prior to microbial conversion.

Objective: Hence the objective of the present study was to isolate ALA from plant oil and convert to LCPUFA by microbial transformation.

Experimental methods: ALA was isolated from rice bran oil by column chromatography. Fungal strain of *Mortierella alpina* was inoculated into GY medium containing three different concentrations of isolated ALA followed by incubation at 200 C for 8 and 15 days. The isolated ALA and microbially converted EPA were identified by TLC and GC.

Results: In 10 % ALA concentration, maximum conversion to EPA was found on 8th day. The EPA in medium was identified and confirmed by TLC and GC compared with reference standard.

Conclusion: The technique of isolation of ALA from plant oil by column chromatography and its microbial conversion to EPA was found to be simple, less time consuming and effective which can be successfully applied to any oil containing ALA to get significant yield of EPA. This can be the good alternative to fish oil for EPA production.

Biography

Shilpa Deshpande has completed her M. Pharm (Pharmacology) and doing Ph.D from Nagpur University. She is Assistant Professor at Sharad Pawar College of Pharmacy, Nagpur. She has published 13 papers in reputed national and international journals and presented many papers in conferences. She has guided three PG students and five UG students. She is a life member of various professional bodies and executive member of IPA and IPS Nagpur local branch.

shilpa18@hotmail.co.in