Isolation of Eicosapentaenoic Acid-Producing Fungi from Soil Based on Polymerase Chain Reaction Amplification

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A method was developed for rapid screening and isolation of eicosapentaenoic acid (EPA)-producing soil fungi through polymerase chain reaction (PCR) amplification. Genes coding for ϕ6 fatty acid desaturase and ϕ5 fatty acid desaturase were used as molecular markers for screening these EPA-producing fungi from soil. Three out of 65 soil fungi gave positive results through PCR amplification. Two out of these three strains were found to produce EPA when they had grown in 80 ml potato/dextrose liquid medium at (25 ∂ 1) °C for 144 h. The EPA yields were 215.81 mg l^{-1} and 263.80 mg l^{-1}, respectively. The other positive strain was detected to produce arachidonic acid (AA). This study indicates that molecular detection of genes encoding ϕ6 and ϕ5 desaturases is an efficient method for primary screening of EPA- or its related polyunsaturated fatty acids (PuFAs)-producing fungi, which can improve the screening efficiency prominently.

Key words: Eicosapentaenoic Acid, Strain Screening, Soil Fungi