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Production of Gamma-Aminobutyric Acid (GABA) from Biowastes (Oil Cakes)

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ABSTRACT

The aim of this study was to produce the γ -aminobutyric acid (GABA) from various oil cakes (neem, castor, sesame, niger and groundnut). Different microorganisms were isolated from oil cakes and spoilt pomegranate capable of producing GABA. The identification of selected microorganisms was done by its morphological characteristics and microscopic observations. The microorganisms isolated was tentatively identified as Monascus sp. and Aspergillus sp. GABA is produced primarily by the decarboxylation of L-glutamic acid catalyzed by glutamate decarboxylase (GAD) by the microorganisms. The presence and concentration of glutamic acid in various oil cakes was determined by Thin layer chromatography (TLC) and titration method. The oil cakes which exhibits higher concentration of glutamic acid i.e., neem oil cake and groundnut oil cake was used as substrate for GABA production. Solid state fermentation was carried out using Monascus sp. and Aspergillus sp for 13 days at 30^{0}C. The extracts were collected and the production of GABA was confirmed by TLC and quantified by Ninhydrin test. The production of GABA from Monascus sp. and Aspergillus sp. using oil cakes as a substrate will be an economical method for industrial application.