A Viable Approach for Biological Detoxification of Non Edible Oil Seed Cakes and Their Utilization in Food Production Using Aspergillus Niger

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Abstract : We used biological detoxification method that converts toxic residue waste of Jatropha curcas oil seeds (non edible oil seed) into industrial bio-products and animal feed material. Present study describes the complete degradation of phorbol esters by Aspergillus Niger strain during solid state fermentation (SSF) of deoiled Jatropha curcas seed cake. Phorbol esters were completely degraded in 15 days under the optimized SSF conditions viz deoiled cake 5.0 gm moistened with 5.0 ml distilled water; inoculum 2 ml of overnight grown Aspergillus niger; incubated at 30◦ C, pH 7.0. This method simultaneously induces the production of Protease enzyme by Aspergillus Niger which has high potential to be used in feedstuffs .The maximum Protease activities obtained were 709.16 mg/ml in Jatropha curcas oil seed cake. The protein isolate had small amounts of phorbol esters, phytic acid, and saponin without any lectin. Its minimum and maximum solubility were at pH 4.0&12.0. Water and oil binding capacities were 3.22 g water/g protein and 1.86 ml oil/g protein respectively.Emulsion activity showed high values in a range of basic pH. We concluded that Jatropha Curcas seed cake has a potential to be used as a novel source of functional protein for food or feed applications.

Keywords : solid state fermentation, Jatropha curcas, oil seed cake, phorbol ester
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