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Alpha amylase production from *Geotrichum candidum* using agriculture wastes

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Amylases are well known for a wide range of applications; from starch and food processing industries to medical therapies. Cassava (CA), rice bran (RB), starch of dried banana peel (BP) and cocunut water (CW) were used to produce alpha amylase by submerged fermentation using *Geotrichum candidum*. Further, feasibility studies were conducted using CW and modified CW as fermentation medium for cassava in order to develop a cost effective fermentation medium for cassava for the production of alpha amylase.

Six culture media were inoculated with *Geotrichum candidum*. Alpha amylase activity, protein content and pH of the culture supernatant and dry weight of the mycelium were measured at 12 hr intervals for 96 hrs. Highest enzyme activity of 58.82 mU ml^{-1} was obtained for CA after a 72 hr incubation period. For RB, a total activity of 26.06 mU ml^{-1} was observed at 84 hrs. A maximum of 10.89 mU/ml^{-1} was observed for BP at 48 hrs incubation and highest activity of 3.01 mU/ml was obtained for CW after 24 hrs. When cassava were directly fermented in CW medium (CACW) a maximum of 14.16 mU/ml was obtained after 12 hrs and cassava in modified CW medium (MCW) showed its highest activity of 54.67 mU ml^{-1} after a 12 hr interval. At the time of highest activity of alpha amylase, the total protein content of the media were 6.02mg, 1.1 mg, 4.43 mg, 0.0, 4.21 mg and 1.4 mg for CA, RB, BP, CW, CACW and MCW respectively. According to the results obtained, CA gave the highest enzyme activity after 72 hrs. A similar activity was observed for cassava in MCW after 12 hrs. MCW thus reduces the time factor by 60 hrs. Therefore, MCW can be used as a fermentation medium for the production of alpha amylase cost effectively and further feasibility studies should be conducted in order to determine the industrial scale production of alpha amylase using MCW media and cassava using *Geotrichum candidum*.

Keywords**:** Agricultural waste medium**,** Alpha amylase, *Geotrichum candidum*, submerge fermentation