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Solid state Fermentation of mixed substrate for L-asparaginase production using tray and in-house designed rotary bioreactor

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Highlights

- Cotton seed cake, wheat bran and red gram husk (tri-substrate) mixture as a cheap energy source for L-asparaginase production.
- Optimization and scale up studies in tray bioreactor and in-house designed rotary bioreactor provided a higher enzyme production.
- Maximum L-asparaginase activity of 19.96 U/gds was obtained with 1.5 kg substrate loading in rotary bioreactor.
- Logistic model was best to describe growth of *Aspergillus tubingensis* IBBL1 on tri-substrate mixture.
- Leudeking-Piret model confirmed L-asparaginase production in rotary bioreactor is growth associated.

Abstract

L-asparaginase cover a broad spectrum of industrial application like food, biosensor and chemotherapeutic drug. In the present work, L-asparaginase production was carried out using tray bioreactor and in-house designed, fabricated rotary bioreactor using previously optimized tri-substrate mixture using *Aspergillus tubingensis* IBBL1. L-asparaginase production by tray bioreactor was performed in temperature controlled chamber. Enzyme production was also performed in newly designed and fabricated rotary bioreactor at room temperature and effect of variables such as substrate loading,

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