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Purification and partial characterization of L-asparaginase enzyme produced by newly isolated Bacillus Sp. (Article)

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Abstract

A new bacterial producing L-asparaginase was successfully isolated from Sungai Klah Hot Spring, Perak, Malaysia and identified as Bacillus sp. It was the best L-asparaginase producer as compared to other isolates. Production of L-asparaginase from the microbial strain was carried out under liquid fermentation. The crude enzyme was then centrifuged and precipitated with ammonium sulfate before being further purified by chromatographic method. HiTrap DEAE-Sepharose Fast Flow ion exchange chromatography followed by separation on Superose 12 gel filtration were used to obtain pure enzyme. The purified enzyme showed 10.11 U/mg of specific activity, 50.07% yield with 2.21 fold purification. The purified enzyme was found to be dimer in form, with a molecular weight of 65 kDa as estimated by SDS-PAGE. The maximum activity of the purified L-asparaginase was observed at pH 9 and temperature of 60°C.

Author keywords

Bacillus sp., Gel filtration chromatography, Ion exchange chromatography, L-asparaginase, Partial characterization

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