Production and characterization of the protease and chitinase from Aspergillus fumigatus TKU003

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ABSTRACT

本研究係探討Aspergillus fumigatus TKU003生產蛋白質?及幾丁質?之較適生產條件，並進行所得蛋白?幾幾丁直?之純化與特性。最適培養條件為：於含有2 % 蝦蟹殼粉、0.1 % K2HPO4、0.05 % MgSO4．7H2O之液態培養基(pH4)，於37℃振盪，培養六天後，可得最高的蛋白?活性(1.15 U/ml)。 Aspergillus fumigatus TKU003發酵液經DEAE-sepharose CL-6B等步驟分離純化後，可得分子量124 kDa，pI為8.3的一種的蛋白?。此蛋白?之pH穩定性、最適反應pH、熱安定性、最適反應溫度分別為7~9、7~10、30~50℃、40℃，PMSF會完全抑制酵素活性，因此推測此酵素係屬一種絲胺酸型蛋白?。 幾丁質?最適培養條件為：1 % 蝦蟹殼粉、0.1 % K2HPO4、0.05 % MgSO4．7H2O、0.1% ammonium sulfate、0.1% ferrous sulfate之液態培養基(pH4)，於37℃振盪，培養四天後，可得最高的幾丁質?活性(1.09 U/ml)。 發酵液經由DEAE Sepharose CL-6B及Sephacryl S-200進行酵素之純化後可得一種幾丁質?，分子量29 kDa，pI為6.5的一種的幾丁質?。此幾丁質?之pH穩定性、最適反應pH、熱安定性、最適反應溫度分別為5~7、4~7、30~50℃、40℃， EDTA會完全抑制酵素活性，因此推測此酵素係屬一種金屬型酵素，又以Mg2+及Fe2+離子能夠增加酵素活性，而Mn2+、Hg2+及Cu2+抑制酵素活性。

Keywords : Aspergillus fumigatus TKU003

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