Synopsis of Original Research Paper

Study on the relationship between structure and karatinase activity of aspartic proteinases

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An aspartic proteinases, proctase B from *Aspergillus niger var. macrosporus*, was prepared by two types of heterologous systems, *i.e.*, an expression- *in vitro* refolding system using *Escherichia coli* and an expression-secretion system using *Bacillus brevis*. Both of the systems gave potentially active proproctase B, which was converted into the mature form under acidic conditions (pH ≦ 5) by autoprocessing. The completely processed form had almost the same properties with native proctase B although their N-termini were different from each other. The *B. brevis* expression system yielded proproctase B corresponding to 50 mg of active proctase B per one liter of culture. The replacement of Arg6 or Lys7 in the prosequence with glutamine increased the yield up to 120 mg. These expression systems, especially the *B. brevissystem*, enable us to alter the properties of proctase B by site-directed mutagenesis and to study the relationships between the structure and substrate specificity of proctase B to increase the activities toward keratin and collagen.