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Multiple forms of extracellular endoglucanase from *Aspergillus sydowii* IMI 502692

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Time-course of endoglucanase (EC 3.2.1.4) production by *Aspergillus sydowii* IMI 502692 in solid substrate fermentation of cassava root fibre shows that the enzyme was maximally produced on 4th day with culture pH of 4.937. Endoglucanase was partially purified from *Aspergillus sydowii* IMI 502592 cell free culture extract. Enzyme activities were routinely assayed using low viscosity carboxymethyl cellulose as a substrate. The enzyme was concentrated by dialysis against 5 M sucrose solution and isolated with ion exchange chromatography on Carboxymethyl Sepharose and gel filtration chromatography on Biogel P 4. The elution profile revealed two protein peaks for endoglucanase I and endoglucanase II showing cellulolytic activities. Endoglucanase I of *A. sydowii* IMI 502692 was purified 2.44 fold to give 0.93% yield and a specific activity of 112.34 Umg^{-1} protein. Endoglucanase II was purified 1.83 fold to give 1.14% yield and a specific activity of 57.35 Umg^{-1} protein. Endoglucanase I was characterized by demonstration of optimum activity at 40oC and pH 3.0 and retention of 65% activity at 70oC (1h). Endoglucanase II had optimum activity at 50oC and pH 7.0 and retained 69% activity at 40oC (1h). Endoglucanase I had a broad pH stability range and temperature activity range of 3 to 6 and 30oC to 80oC, respectively unlike endoglucanase II with single peak of pH stability and temperature activity at 6.0 and 50oC, respectively. Mn^{2+} activated endoglucanase I activity most while Fe^{2+} activated endoglucanase II activity most. Both enzymes activities were inhibited by Cu^{2+} and Ni^{2+} in addition, Ca^{2+} also inhibited endoglucanase II.

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