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Partial purification and characterization of deoxyribonucleases from *Nepenthes distillatoria*

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Occurrence and some enzymatic properties of deoxyribonuclease/s in the pitcher juice of *Nepenthes distillatoria* were reported previously. High stability even at 50^0C and over a broad pH range suggested the presence of novel deoxyribonucleases with distinct properties in the crude *Nepenthes* juice. In this study the DNases were partially purified and their stability was investigated at different temperature and pHs.

Partial purification of DNases present in the crude juice was carried out using DEAE cellulose anion exchange chromatography at 4˚C. Optimum temperature and pH for different enzymes were determined separately. Thermal and pH stability of the DNases were determined by incubating them separately at different temperatures and pHs for a period of one month. Aliquots were removed at different time intervals and the percentage remaining DNase activity of each aliquot was determined.

Partial purification on DEAE cellulose chromatography suggests the presence of four different DNases (DNase1, DNase 2, DNase 3 and DNase 4) in the crude pitcher juice. DNases 2 and 3 were found to be the abundant enzymes according to the total volumes for each enzyme. Optimum temperature and pH for DNases 1, 2, 3 and 4 were 50˚C & pH 3.0, 40˚C & pH 3.0, 45˚C & pH 6.0 and 45˚C & pH 3.0, respectively. All four enzymes had a significant stability over a broad pH range for two weeks. Moreover, all four enzymes showed a remarkable thermal stability. On average, all the enzymes had more than 75% remaining activity after two weeks at 50˚C and at 37˚C it was more than 85%. These results clearly demonstrate that all four enzymes are stable at high temperatures over a broad pH range. Therefore, DNases present in the pitcher fluid of *N. distillatoria* may have remarkable properties to withstand against high temperatures, a wide pH range as well as attack by proteinases present in the crude juice. These features clearly indicate the wide applicability the enzymes. Further studies are in progress on purification and characterization of the different DNases.

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