

Comparative Studies on Thermostable Superoxide Dismutase Isolated from *Myristica fragrans* and *Trigonella foenum-graecum*: Therapeutically Important Spices

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Abstract—Superoxide dismutase (SOD) (EC1.15.1.1), a powerful antioxidant enzyme plays a crucial role in the defense system of our body by dismutating the superoxide anion, thus, preventing us from various dreadful diseases. In the present study, biochemical properties of SOD isolated from Nutmeg (*Myristica fragrans*) and Fenugreek (*Trigonella foenum-graecum*) have been compared. Both the sources were found to have high specific activity of SOD; 25.6 units/mg and 20.1 units/mg, respectively. SOD enzyme isolated from the above two sources after being partially purified into three fractions (0-30%, 30-60% and 60-90%) using ammonium sulphate as precipitating agent, gave 0-30% fraction with highest SOD specific activity of 35.5 units/mg and 58.8 units/mg in *Myristica fragrans* and *Trigonella foenum-graecum* respectively. The optimum pH and temperature conditions for maximum enzyme activity were found to be 6.0 and 50°C, in both the cases i.e.; *Myristica fragrans* and *Trigonella foenum-graecum* respectively. The enzyme was found to be thermally stable and retained its activity upto 60°C and 70°C in *Myristica fragrans* and *Trigonella foenum-graecum* respectively, showing its great applicability in industries with high economical feasibility. From the results obtained, it may be concluded that spices like Nutmeg and Fenugreek may serve as potential sources of SOD, a powerful antioxidant enzyme. Also, the thermostability of SOD has immense importance in various bioindustries and can be explored for pharmaceutical purposes to combat many pathological diseases.