Screening, Production, purification and characterization of Bromelain from *Ananas Comosus* and its applications

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ABSTRACT

Bromelain is a major protease, isolated from pineapple *(Ananas comosus).* Bromelain is accumulated in the entire plant to different extent and properties depending on its source. In the present study, Bromelain was extracted from all parts of pineapple using sodium citrate buffer. Bromelain was filtered, centrifuged and used for further studies. After the determination of protease activity and protein content, the Core and Pulp extract of *A.comosus* was chosen using gelatin as the substrate. The samples were optimized on the basis of pH, temperature, Substrate concentration and etc. After optimization, the Bromelain was purified by precipitation and dialysis. Then SDS-PAGE was performed in order to determine the molecular size of the obtained protein. Then the effectiveness of Bromelain as an anti-browning agent, extracted and purified from pineapple Core and Pulp was determined. The study showed that Bromelain is a better anti-browning agent when compared with some of the available commercial anti-browning agents. Further the application of Bromelain was tested by stain removal, compared to positive control, the ability of stain removing property for the produced enzyme was observed to be good. The Core and pulp bromelain was tested for antibacterial activity against bacterial pathogens. Among them, Pulp bromelain had maximum inhibition effect on *Bacillus subtilis, Klebsiella pneumonia* and Core bromelain had maximum inhibitory effect on *Bacillus subtilis, Proteus vulgaris, Schigella flexneri* and *Escherichia coli* and there was no inhibitory activity for the other tested pathogens. Immobilized Bromelain prepared using calcium alginate beads and its stability and characters were noted.

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