239/E_2

Preliminary studies on the development of an economical extraction procedure for Bromelain from pineapple waste

S Jeevathayaparan and S R Sirimanne*
Department of Biochemistry and Molecular Biology, Faculty of Medicine, University of Colombo, Colombo 8

Bromelain is a general name for a family of sulfhydryl proteolytic enzymes obtained from *Ananas comosus*, the pineapple plant. Bromelain was first introduced as a therapeutic compound in 1957 and its therapeutic applications include inhibition of platelet aggregation, fibrinolytic activity, anti-inflammatory action, anti-tumor action, modulation of cytokines and immunity, skin debridement properties, enhanced absorption of other drugs, mucolytic properties, digestive assistance, enhanced wound healing and cardiovascular and circulatory improvement. Bromelain preparations are available as over-the counter pharmacological preparations all over the world. Bromelain is well absorbed orally and available evidence indicates that its therapeutic effects are enhanced with higher doses. In Sri Lanka, pineapple is a popular fruit that is grown in almost all backyards. Pineapple shops and juice producing factories discard about 30% of the pineapple fruit as the skin and unedible part. Bromelain exists in all parts of the pineapple plant. In this study we have explored whether bremelain is extractable from discarded pineapple parts following an economical procedure. Of the tissues tested the skin that is removed during the preparation of the fruit for human consumption has the highest bromelain content. In addition, we tried to evaluate ammonium sulfate precipitation and acetone precipitation as partial purification methods which utilise fairly inexpensive, partially recyclable materials. Of these two methods used, acetone precipitate of the extract from fruit homogenate was found to give the highest yields. Fast-protein liquid chromatography indicates that the component of the purified sample with proteolytic activity is about 80%.

* sarath.sirimanne@gmail.com Tel: 011-2697485