

Abstract 35 – Paper ID: 054**Study on the Stability Characteristics of Partially Purified Fruit Bromelain from Pineapple *Ananas comosus* L. (Merr.) cv. Queen**

Leishangthem Hilemba Meitei¹, L. Rupachandra Singh¹

¹Department of Life Sciences, Manipur University, Canchipur, Manipur, India

Email: hilenbalei123@gmail.com

Abstract

Bromelain is a cysteine protease with high industrial demand due to its wide range of applications in the pharmaceutical, cosmetic, and food industries. It is used as an anti-inflammatory agent, immune modulator, drug absorption enhancer, potential anticancer agent, and meat tenderizer, among others. Depending on the source, bromelain is classified into fruit bromelain and stem bromelain. Among these, fruit bromelain generally exhibits higher proteolytic activity than stem bromelain; however, it is relatively unstable during long-term storage. Consequently, most industrial applications currently rely on stem bromelain. A systematic study on the stability characteristics of the more potent fruit bromelain is therefore important to enable its economical and profitable industrial utilization.

In the present investigation, fruit bromelain was partially purified from ripe pineapple (*Ananas comosus* L. (Merr.) cv. Queen) using ammonium sulphate fractionation (20–50%). The pH stability (pH 6–9), temperature stability (0–10 °C), and the effects of different reducing agents on the activity of the partially purified fruit bromelain were evaluated. In addition, the stability of the enzyme was assessed by storing it either as an ammonium sulphate precipitate or in lyophilized form.

Keywords: Fruit bromelain, *Ananas comosus*, Ammonium sulphate fractionation, Enzyme stability, Lyophilization