

ISOLATION, PURIFICATION AND MODIFICATION OF PAPAIN ENZYME TO ASCERTAIN INDUSTRIALLY VALUABLE NATURE

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ABSTRACT

Papaya (*Carica papaya* L.) is one of the most popular and economically significant fruit highly prevalent in both the tropical and subtropical arena of the world such as Hawaii, South Pacific, South America, East Africa and South East Asia. Not only this item is consumed as fresh fruit or vegetable but also utilized as potential enzyme and nutrients supplement in food industry. Unripe green papaya as well as other part of papaya tree is concentrated with latex, which is composed of several valuable enzymes: papain, chymopapain, caricain and glycyI endopeptidase. To make industrially useable state, these enzymes needs to extracted and purified from green papaya fruits. It is crucial to isolate papain in the native crystalline state from fresh latex. Different well established methods of isolation and purification of crystalline papain are described here. ATPS and Sephadex G-75 based methods followed by several drying procedure are widely used for papain isolation and purification. To test and optimize the enzymatic activity, tyrosine method and Z-Gly-pNP are also frequently applied. Aided with several advance techniques, kinetics and ionization of catalytic site are also obtained. Finally, at the aim of high purity and enhanced catalytic activity a number of enzyme modifications approach has also been illustrated here. Recently, this enzyme is being used for pharmaceutical and medical purposes.

KEYWORDS: Latex, Papain, Proteolytic Enzymes, ATPS, Synthetic Substrate, Tyrosine, Z-Gly-pNP, Sephadex G-75