



002053

CENTRAL LIBRARY
MAHIDOL UNIVERSITY

PURIFICATION AND CHARACTERIZATION OF LINAMARASES

FROM CASSAVA (MANIHOT ESCULENTA CRANTZ)

BY

THIDARAT EKSITTIKUL

2

(B.Sc. in CHEMISTRY)

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENT FOR THE DEGREE OF
MASTER OF SCIENCE
IN
BIOCHEMISTRY

FACULTY OF GRADUATE STUDIES

MAHIDOL UNIVERSITY

1986

Copyright by Mahidol University

<p>อธิบดีมหาวิทยาลัย</p> <p>จาก</p> <p>บัณฑิตวิทยาลัย. น. นิดล</p>
--

ABSTRACT

Stem, petiole and root cortex of cassava were found to be richer in linamarase than root parenchyma while no activity was found in the leaf.

Linamarase was purified from extract of stem, petiole or root cortex by precipitation at 65 % ammonium sulfate saturation followed by Sepharose 6 B column chromatography and Chromatofocusing. The enzyme from each source was found to have the native M_r of 600,000. By SDS-PAGE, the subunit M_r was found to be 63,000. So the native structure was oligomeric. The enzyme from each source was separated by Chromatofocusing into three isozymes with the pI values of 4.2-4.3, 3.3-3.6 and 2.8-2.9. The enzyme from each source has K_m values of 1-2 mM for linamarin and 13-18 mM for p-nitrophenyl- β -D-glucopyranoside, optimum temperature 55°-65° C and pH optima 7 for linamarin, pH 8 for p-nitrophenyl- β -D-glucopyranoside. They were similarly inhibited by δ -gluconolactone and isopropyl- β -D-thioglucopyranoside. Based on these similar properties, they were likely to be the same enzyme. The isozymes showed the same K_m value of 1-2 mM for linamarin. It can be concluded that petiole, stem and root cortex of cassava were good sources of linamarase.