

A salt-resistant thrombolytic enzyme found in salted fish guts "Shiokara"

HIROYUKI Sumi, NOBUYOSHI Nakajima and HISASHI Mihara*

Department of Food Science, Okayama Prefectural Junior College,

*Department of Physiology, Miyazaki Medical College

Summary

Katsuwokinase (KK) is a unique fibrinolytic enzyme recently been discovered in skipjack "Shiokara", a Japanese traditional salted fermented food. A crude enzyme extracted from skipjack Shiokara exhibited very high fibrinolytic activity of over 45 CU/g (fibrin plate method), based on plasmin.

KK not only hydrolyzed fibrin but also several synthetic amide substrates, particularly for pyro-Glu-Gly-Arg-pNA. The fibrinolytic activity of KK was not affected by the presence of over 10 % NaCl, remaining stable over the pH range of from 1 to 10 at 37°C for 30 min. It was inhibited by DFP, SBTI, BPTI or aprotinin, but not by ϵ -ACA and ϵ -AMCHA.

The crude enzyme contains at least 4 kinds of KK and the major form purified had pI of about 5.0 and mol. wt. of 35,000. The N-terminal amino acid sequence of 16 residues, I-V-G-G-Y-E-Q-Z-A-H-S-Q-P-H-Q-V-, had over 78 % homology with that of trypsin. The fibrinolytic activity of the purified enzyme was about 2.6 times greater than that of plasmin by molar ratio, demonstrating its identity as a new very potent fibrinolytic enzyme.