

Proteolytic and Biocatalytic Activities of Animal Spleen Extracts

Jambalsuren Bayarmaa¹ and Dondog Purev¹

¹Department of Biology, School of Arts & Sciences, National University of Mongolia,
Ulaanbaatar 14201, Mongolia. e-mail: bayarmaa@num.edu.mn

Abstract

Key words: spleen, extract, protease activity, biocatalytic properties

Article information:

Received: 06 June 2018

Accepted: 04 July 2018

Published online:

18 September 2018

Correspondence:

bayarmaa@num.edu.mn

Proteolytic activity and biocatalytic properties of spleen extracts from six animals were studied. Among tested spleens, extracts from the camel's spleen showed the highest activity, followed by bovine, horse, caprine, porcine and ovine extracts. Also the effects of NaCl and (NH₄)₂SO₄ on proteolytic activity was investigated. Spleen extracts contained heat stable acid protease with optimum pH of 2.6 and Topt at 40°C. Thermal inactivation kinetics was described as second order model.

Cite this paper as:

Bayarmaa, J. & Purev, D. 2018. Proteolytic and biocatalytic activities of animal spleen extracts. *Mong. J. Biol. Sci.*, 16(1): 37-41.

Introduction

Meat and meat processing industry is one of the leading industries in food production of Mongolia. According to the data of Mongolian Ministry of Agriculture for 2015, about 17.5 thousand tons of meat was processed in this country, which increased by 0.7 thousand tons in comparison with the previous year (<https://www.mofa.gov.mn>). For 2015, about 5.6 thousand tons of meat and meat products were exported and the meat processing industry is increasingly and becoming one of the export income generators for economy. Animal viscera are a potential source of enzymes as proteases. Digestive proteases have been extensively studied. The most important digestive enzymes are gastric pepsin, pancreatic trypsin and chymotrypsin. Mongolian scientists isolated and purified trypsin and chymotrypsin from cattle pancreas, conducted a comparative studies with porcine and bovine enzyme (Alimaa *et al.*, 1985a;

1985b), and developed pancypsin production technology from the ovine + caprine pancreas (Alimaa *et al.*, 1989). However, no information regarding the characteristics and properties of the pasture animals' spleen proteolytic enzymes as the source for protease, has been reported. This study aimed to characterize some proteolytic activities and biocatalytic properties of spleen extracts of six animals as cattle, horses, camels, sheep, goat and pig, commonly used in meat processing industry in our country.

Material and Methods

General. All chemicals used in this study were chemically pure. Reagents for buffer solution, acids and bases were purchased from Tsetsuuh Trade Co Ltd. (Mongolia). Albumin was obtained from Sigma-Aldrich (Korea). All used reagents were of analytical