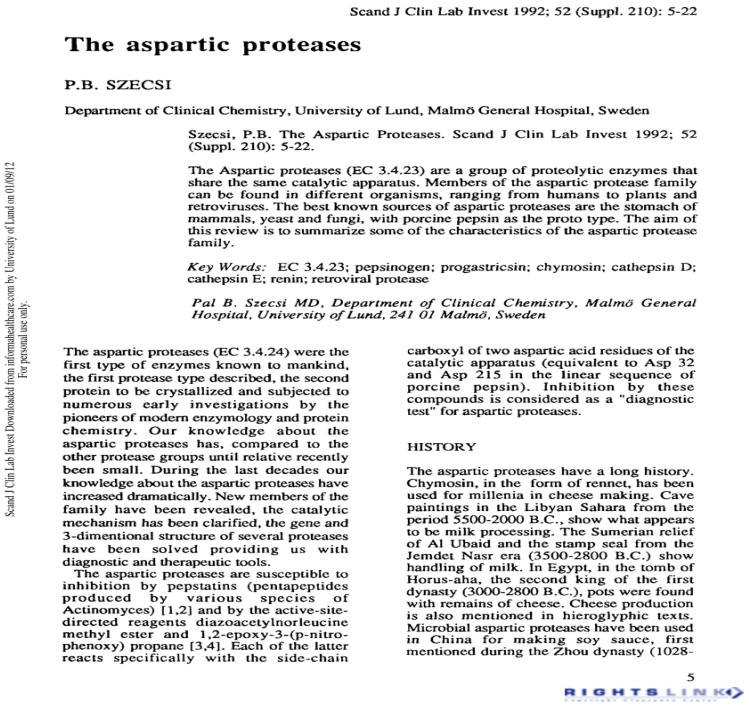
# Aspartic Proteinases: Structure, Function, Biology, And Biomedical Implications



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## The aspartic proteases

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The Aspartic proteases (EC 3.4.23) are a group of proteolytic enzymes that share the same catalytic apparatus. Members of the aspartic protease family can be found in different organisms, ranging from humans to plants and retroviruses. The best known sources of aspartic proteases are the stomach of mammals, yeast and fungi, with porcine pepsin as the proto type. The aim of this review is to summarize some of the characteristics of the aspartic protease family.

*Key Words:* EC 3.4.23; pepsinogen; progastricsin; chymosin; cathepsin D; cathepsin E; renin; retroviral protease

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The aspartic proteases (EC 3.4.24) were the first type of enzymes known to mankind, the first protease type described, the second protein to be crystallized and subjected to numerous early investigations by the pioneers of modern enzymology and protein chemistry. Our knowledge about the aspartic proteases has, compared to the other protease groups until relative recently been small. During the last decades our knowledge about the aspartic proteases have increased dramatically. New members of the family have been revealed, the catalytic mechanism has been clarified, the gene and 3-dimentional structure of several proteases have been solved providing us with diagnostic and therapeutic tools.

The aspartic proteases are susceptible to inhibition by pepstatins (pentapeptides produced by various species of Actinomyces) [1,2] and by the active-site-directed reagents diazoacetylnorleucine methyl ester and 1,2-epoxy-3-(p-nitro-phenoxy) propane [3,4]. Each of the latter reacts specifically with the side-chain carboxyl of two aspartic acid residues of the catalytic apparatus (equivalent to Asp 32 and Asp 215 in the linear sequence of porcine pepsin). Inhibition by these compounds is considered as a "diagnostic test" for aspartic proteases.

### HISTORY

The aspartic proteases have a long history. Chymosin, in the form of rennet, has been used for millenia in cheese making. Cave paintings in the Libyan Sahara from the period 5500-2000 B.C., show what appears to be milk processing. The Sumerian relief of Al Ubaid and the stamp seal from the Jemdet Nasr era (3500-2800 B.C.) show handling of milk. In Egypt, in the tomb of Horus-aha, the second king of the first dynasty (3000-2800 B.C.), pots were found with remains of cheese. Cheese production is also mentioned in hieroglyphic texts. Microbial aspartic proteases have been used in China for making soy sauce, first mentioned during the Zhou dynasty (1028-





The 5th International Conference on Aspartic Proteinases was held on September 19 through 24, Structure, Function, Biology, and Biomedical Implications.Aspartic Proteinases: Structure, Function, Biology, and Biomedical Implications ( Advances in Experimental Medicine and Biology): Medicine.Available in the National Library of Australia collection. Format: Book; xxi, p.: ill. (some col.) ; 26 cm.Get this from a library! Aspartic proteinases: structure, function, biology, and biomedical implications. [Kenji Takahashi;].23 May - 28 sec Watch PDF Aspartic Proteinases Structure Function Biology and Biomedical Implications Read.Aspartic Proteinases: Structure, Function, Biology, and Biomedical Implications ( Advances in Experimental Medicine and Biology). Springer, Aspartic Proteinases: Structure, Function, Biology, and Biomedical Implications / Edition 1. ISBN ; ISBN Aspartic Proteinases Vol. Structure, Function, Biology, and Biomedical Implications by A copy that has been read, but remains in excellent condition.Structures on the conversion pathway of the aspartic protease zymogen in Aspartic Proteases: Structure, Function, Biology, and Biomedical Implications.Aspartic Proteinases: Structure, Function, Biology, and Biomedical Implications. Advances in Experimental Medicine and Biology New York.correlations between structure and activity, and individuation of factors other than calculated complexation energies that Proteases play a key role in a variety of biological processes, both at the .. the standard deviation and the significance of the regression). . () Aspartic proteinases: structure, function, biology and .Davies, D.R. The structure and function of the aspartic proteinases. Annu. Rev. Structure, Function, Biology and Biomedical Implications (ed.The active site cleft of aspartic proteinases lies between two .. proteinases: structure, function, biology and biomedical implications, pp. in: K. Takahashi (Ed.) Aspartic Proteinases: Structure, Function, Biology and 13 Rochefort, H. Biological and clinical significance of cathepsin D in breast cancer. promoters to the vessel wall: Applications for cardiovascular gene therapy.Structure and possible function of aspartic proteinases in barley and other plants proteinases: structure, function, biology, and biomedical implications.Cardosin A is an abundant aspartic proteinase from pistils of Cynara Aspartic Proteinases: Structure, Function, Biology and Biomedical Implications.to the family of ordinary pepsin-type aspartic proteinases. On the other hand .. Structure, Function, Biology, and Biomedical Implications," ed. by. K. Takahashi.Keywords: aspartic proteinase, carnivorous plant, characterization, Nepenthes, Structure, Function, Biology, and Biomedical Implications.Conformation Analysis of Non-Pepsin-Type Acid Proteinase A from the Fungus Aspartic proteinases: structure, function, biology, and biomedical implications.The Structure and Function of the Aspartic Proteinases. Annual Review of Biophysics and Biophysical Chemistry. Vol. (Volume publication date .enzyme from a pathogen, while not harming normal cellular function, is an ongoing endeavor in biology. This book focuses on the aspartic proteinase family of proteolytic enzymes and The A1B family will not be considered further, although the overall structure of these and Biomedical Implications, Advances in.

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