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Structural view on substrate specificity of dipeptidyl peptidase III (DPP III)

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Dipeptidyl peptidase III (DPP III), also known as enkephalinase B, belongs to family of M49 of zinc-dependent metallopeptidases and cleaves dipeptides sequentially from the N-terminus of numerous bioactive substrates. These peptides are produced in the body and have been shown to act as neurotransmitters by interacting with their cognate receptors. Some of them form the endogenous opioid peptide system, which modulates large numbers of motivational, sensory and cognitive functions. Moreover, they contribute to the regulation of diverse physiological functions like signal transduction, gastrointestinal motility, social behavior with the aspect to drug addiction and immune functions. Many pharmacological experiments showed the role of DPP III in pain modulation and recently implicated its involvement in oxidative stress response or in the regulation of blood pressure, which fostered higher interest in investigation of this enzyme. DPP III is found in different species including higher mammals, but has also been described in lower eukaryotes like the yeast Saccharomyces cerevisiae and in some bacterial species like Porphyromonas gingivalis and Bacteroides thetaiotamicron. It has been reported that DPP III acts as post proline cleaving enzyme. This leads to the conclusion that it can develop amino acid pool by cleaving proline containing peptides which are usually resistant to hydrolysis by other aminopeptidases. This presentation provides a general overview of dipeptidyl peptidases III from different organisms, their biochemical and structural properties.

Biography

Altijana Hromic has completed her Master's studies in Biochemistry and Molecular Biomedicine 2013 from Graz University of Technology and is attending her PhD studies at the University of Graz. She has published more than 10 papers in reputed journals and has extended experience in industry projects.

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