

Aminopeptidase P (DAP) Expression Pattern in *Drosophila Melanogaster*

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Abstract : Aim: Aminopeptidase P (APP) is an enzyme that has specificity for proline, can specifically cleave Xaa-Proline peptides and is a metallo-aminopeptidase. The bonds nearby to the imino acid proline are tough to cleave by many peptidases, but APP can specifically break peptide bonds engaged with proline. Membrane-bound form and a cytosolic form are the two forms in which this enzyme exists. The exact physiological function of APP remains unclear and hence the present work attempts to determine it. Methods: In the present study, the expression pattern of cytosolic Aminopeptidase P (DAP) was determined in all the embryonic stages and larval stages of wild-type *Drosophila* by using polyclonal monospecific antibodies. To show the presence of DAP RNA in embryonic and larval stages, RNA in situ hybridization was performed. DAP promoter-LacZ fusion reporter gene vector was used to construct transgenic embryos to study the regulation pattern of DAP. To study the DAP expression profile, a transgenic fly consisting of a DAP promoter with β -gal and GFP reporter genes in front of it was constructed. Results: DAP protein expression was observed in neuroectodermal cells, posterior midgut primordium, proctodeum, ventral neuroblast and primordial stomatogastric nervous system. It was observed in the ventral cord and midgut in stage 12. The completely developed embryos showed the intense occurrence of it in the ventral cord and gut region. The eye-antennal disc, wing disc and leg disc also showed the presence of DAP protein. LacZ expression in transgenic embryos also showed the same pattern. Conclusion: Similar to various known multiple-functional proteins, DAP could be one with different functions at different stages and in different cells. Data presented here designates DAP functions in the early embryonic and imaginal discs differentiation and development, suggesting that it may be required for the metabolism of proteins like neuropeptides and tachykinins.

Keywords : aminopeptidase P, in situ hybridization, transgenic fly, embryonic stages

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