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cDNA cloning of DOPA decarboxylase from *Bombyx mori*, and its specific expression in four cells of suboesophageal ganglion (SG)

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DOPA decarboxylase (DDC), which converts DOPA to dopamine, is important for many biological events such as cuticular melanization, sclerotization and neurotransmission in insects. Recently, it has been also shown that the DDC activity is correlated with embryonic diapause in the silkworm, *B. mori*. However, the complete structure of DDC gene has not yet been identified in this insect. To clarify the structural features, we have characterized a complete cDNA encoding DDC gene from the silkworm, *Bombyx mori*, in the present study. The predicted open reading frame encoded 478 amino acids, with 88%, 73% and 70% identities with the DDC of *Manduca sexta*, *Drosophila melanogaster* and *Ceratitis capitata*, respectively. A single 2.5-kb message for DDC gene was abundant in testis and epidermis but rare in ovary, silk gland and fat body at E1 stage of the fourth molting. We found that the putative DDC gene of the cultured epidermis could be induced by 20E removal from the medium. During embryogenesis, two peaks of expression for DDC were observed. These results suggest that expression of DDC could be controlled by ecdysteroid action in tissue- and stage-specific manners. Whole mount *in situ* hybridization with DDC gene showed broad and non-localized expression in most tissues examined. The signals in suboesophageal ganglion (SG), however, were detected from only four cells in the anterior region near the midline, while no positive signal in brain and first-thoracic ganglion. The location of DDC positive cells in SG seems to surround the diapause hormone and PBAN (DHP) producing cells, suggesting that the dopamine produced in these cells may be involved in regulation of synthesis for some neuropeptide.