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Primary sensory projections from the labella to the brain of *Drosophila melanogaster* Meigen (Diptera : Drosophilidae)

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Abstract

Golgi silver impregnation of sensory neurons arising from labellar taste sensilla of *Drosophila melanogaster* Meigen (Diptera : Drosophilidae) revealed 7 distinct types I-VII of primary (sensory) fibres projecting to the suboesophageal ganglion (SOG) of the brain. Each fibre was classified on the bases of the neuropil volume occupied by its terminal arborisation, the shape of neuropil region receiving the arborisations and the detailed morphology of the arborisations. The primary sensory fibre projections from the labella are confined to the SOG where they project mainly in the anterior and central neuropils. No labellar sensory fibres project to posterior SOG. Of these 7 types of sensory fibres, three (III, IV and VII) show ipsilateral projections, while others have both ipsi-, and contralateral branches.

Four types of interneurons are suggested to be associated with taste perception. Type A interneurons are local interneurons with arborisations confined only to the taste sensory neuropil of the SOG. The types B - D interneurons are interganglionic/output neurons with axons projecting to various brain regions-SOG, calyces of the mushroom bodies, tritocerebrum and thoracic ganglia. These projections suggest that more than one centre (SOG, tritocerebrum, calyces of the mushroom bodies and thoracic ganglia) are involved in processing gustatory information.



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Keywords

Insect neuroanatomy; gustatory neurons; taste perception

Abbreviations

A-D, types of interneurons; BR, brain; LN, labial nerve; Oe, oesophagus; I-VII, types of sensory fibres from the labellar sensilla projecting in the suboesophageal ganglion; SOG, suboesophageal ganglion

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