

SHORT COMMUNICATION

Describe the Receptor Organs of Species *Entomobrya manalica*

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ABSTRACT

In present work, we studied the structure and function of photoreceptors organs in Collembola species *Entomobrya manalica*, which belongs to the family Entomobryidae.

KEYWORDS: *Entomobrya manalica*, Trichoid Sensilla

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INTRODUCTION

The Collembola are well known apterygotes among insects and are most interesting due to their jumping habits and popularly called as "Springtails" and "Snowfleas". They are minute delicate and soft bodied insects. They are present in soil, in decaying vegetables, moist organic matter, wooden logs, on the surface of water, fallen leaves, litter and humus layer in forest and in ant and termite nests, caves, among moss, fungus, foliage of herbs and shrubs. The size and shape of receptor organs are highly variable in different insects, but within of some Indian apterygotes (Insecta: Collembola) a certain degree of uniformity becomes apparent. The typical sensory receptors in Collembola are of following types- Trichoid sensilla, Sensilla basiconica, Sensilla chaetica, Sensilla squamiformia, Temperature receptors, Tenent hairs, Claw with long sensory filament, Photoreceptor organs. The receptor organs consist of postantennal organs of different size and shape just at the base of the antennae and ocelli on the dorsal side of cephalic capsule. Karuhize [1] reported the structure of the postantennal organs in Collembola also with the connection to the central nervous system, while Neville [2]. Verma *et al* [3] described the photoreceptors organs in Hypogastruridae; while Lewis [4] reported on the structure and function in some external receptor organs in Collembola.

MATERIAL AND METHODS

The material for the present study was largely obtained under fallen leaves, and stones of Manali, Valley. The specimens were mostly procured from under heaps of cry fallen leaves, among mosses, edges of stream and rivers. Large number of specimens was collected from different localities and wheat and rice crop fields during monsoon near Agra region. The specimens were collected with the help of camel hair brush mounted with 90% alcohol. The microscopically study of the structure of the receptor organs, specimens were first put into dil. KOH and then mounted on slide under a binocular microscope and mounted in salmon's polyvinyl alcohol-lactophenol medium.

RESULTS AND DISCUSSION

***Entomobrya manalica*:** Body deep green dorsally with blue pigmentation and yellowish green ventrally. Ocellar field blue-black and head suffused with blue pigments. Thorax laterally with blue pigments, abdominal segment first, second and third has pigmentation in form of band and fifth abdominal segment also pigmented, abdominal segment completely pigmented and sixth without any pigmentation. Appendages with blue pigments. Body covered by large number of flexed setae on head and prothorax. Appendages clothed with simple setae.

1. **Trichoid Sensilla (Tr. S.)** - These are present all over the body in the form of simple setae and are mechanoreceptor for receiving air current and orient the body of species accordingly to air current.

Numerous trichoid sensilla are present in the form of flexed setae on prothorax which form cephalic air flow, to find out the air current and orient the body of species against air current. These are also present on dens dorsally crenulated with large number of ciliated setae, which form jumping flow of Collembola and help in jumping reflex.

2. **Sensilla Basiconica (Sn.B.)** - They are present just at the base of each antennae segment in the form of peg like.
3. **Sensilla chaetica**- Absent
4. **Sensilla squamiformia**- Absent
5. **Temperature Receptors (T.Rp.)** - These are present on the antennae and foreleg in the form of small setae for finding out the fluctuation of temperature.
6. **Tenant Hairs (Ten.H.)** - Clavate tenant hairs are well developed to each foot, which help in locomotion of Collembola on the smooth surface.

Photoreceptor organs are as follows :

(i) Post Antennal Organs (Post. Ant. Org.) - These are of variable shape, made up of transparent cuticle behind the base of antennae.

(ii) Ocelli (Oc.) - Eight ocelli, three anterior ocelli large, five posterior are small and sub-equal in size. These ocelli arc meant for finding out the intensity of light. They are also chemo receptor of species and are meant for finding out the taste and odour of few materials.

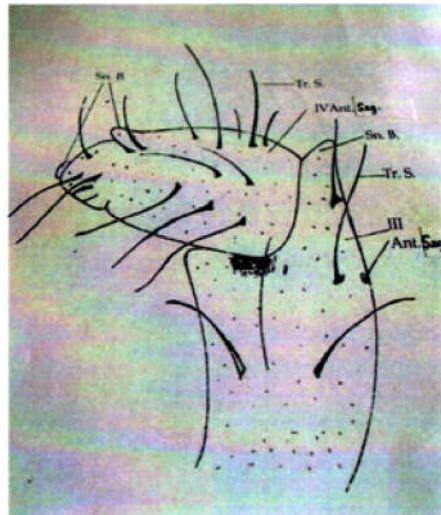


Fig.1 *Entomobrya manalica* Receptor organs of the Antennae
Tr.S.- Trichoid sensilla, Sn.B.- Sensilla basiconica

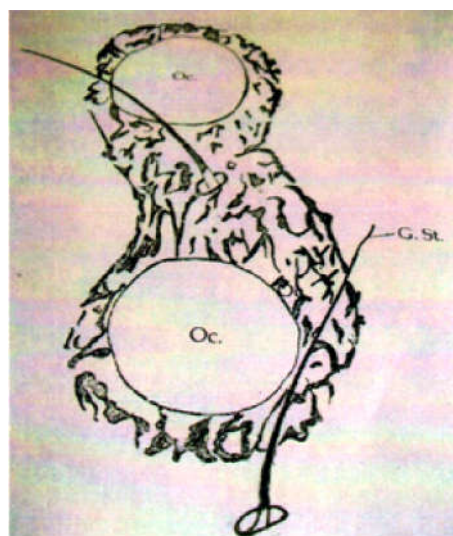


Fig. 2- *Entomobrya manalica* Photoreceptors
G. St.- Guard setae; Oc.- Ocelli

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