



## Study on the feeding preference and feeding habits of the oribatid mite *Papillacarus elongatus* Xavier (Acari: Oribatida: Lohmannidae) using microfungal and leaf litter diets\*

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Oribatid mites are essential to the decomposition of plant tissues in temperate forests by assisting the conversion of primary productivity to soil organic matter and thereby nutrient release. The feeding habits and preference of one of the important soil oribatid mite, *Papillacarus elongatus*, were observed under the laboratory conditions (RH 80±2% and Temperature 27±2 °C) by providing different microfungi (*Pseudo pestalotiopsis*, *Ectophoma multirostrata*, *Curvularia verruculosa*, *Corynespora cassiicola*, *Lasiodipladia theobromae*, *Trichodema harzianum*) and semi degraded leaves (*Hevea brasiliensis*, *Theobroma cacao*, *Myristica fragrans*, *Artocarpus hirsutus*, *Artocarpus heterophyllus*, *Mangifera indica*) as food items. Among these food items, the mite fed less on microfungi *Pseudo pestalotiopsis* and *Ectophoma multirostrata* but actively fed on *Curvularia verruculosa*, *Corynespora cassiicola*, *Lasiodipladia theobromae* and *Trichodema harzianum*. They completely rejected semi-degraded leaves of *Hevea brasiliensis*, *Theobroma cacao* and *Myristica fragrans* but actively fed on *Artocarpus hirsutus*, *Artocarpus heterophyllus*, and *Mangifera indica*. The rate of feeding and their ability to select favoured food items could be analyzed statistically by conducting an ANOVA test, which revealed that the *F* value was significant at  $p < 0.05$  level. The results of this study indicate that the *P. elongatus* can exhibit both microphytophagous and panphytophagous feeding behaviour, as they could feed both lower plant elements like fungal hyphae and higher plant parts like leaves. Defecated faecal pellets of the reared oribatid mites were also observed on individual food items in culture vessels and counted after 24, 48, 72, 96 and 120h. The results confirmed the preferred food items in the present experiment. The enzyme assays showed that the possession of cellulose-splitting enzymes like cellulase, trihalase and chitinase suggests their ability to degrade polysaccharides. These alternative feeding guilds in this species and their possible interactions with the fungal community were related to organic matter decomposition which may help them indirectly affect the microbial activity and be directly involved in the biodegradation of leaf litter in the soil ecosystem.

**Keywords:** Oribatida, *Papillacarus elongatus*, feeding preferences, microfungi, semi-degraded leaves, biodegradation