

New records of the *Metschnikowia* yeasts inhabiting in the intestines of lacewing insects from Japan

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Purpose: Various insects harbor the yeasts in their intestines, some of which have symbiotic relationships each other. Since the discovery of the yeasts in lacewing guts by Hagen et al. (1970), yeasts have been detected from 6 spp. (of 4 genera, fam. Chrysopidae, ord. Neuroptera) in North America. This study aims at surveying the intestinal yeast flora of lacewings in Asia for the first time.

Methods: In 2018, we collected 38 individuals of 9 spp. (of 6 gen., fam. Chrysopidae) lacewings in Japan (Nagano, Tokyo, Ibaraki), and isolated yeasts from their intestines. To identify them, molecular phylogenetic analysis was carried out using rDNA LSU D1/D2 region by RAxML-NG(Kozlov et al. 2019).

Results and conclusions: We established 38 yeast isolates. As a result of preliminary BLAST analyses, all of isolates were identified as members of the genus *Metschnikowia*. Further phylogenetic analyses showed that they were divided into two major clades.

Clade 1 contained *M. picachoensis* and *M. pimensis* known from the guts of lacewings (*Chrysoperla* sp.) in North America.

Clade 2 was a completely new one which is the sister clade to *M. corniflorae* known from the guts of Coleoptera and divided into five subclades.

Some lacewings feed on the nectar or honeydew. Considering the possibility that they obtain the yeasts from the nectar, it was checked whether the sequences of the present yeasts are detected or not in the environmental sequences of nectars in the collection site (Nagano). However, there was no matching of the sequences.