

## Phylogeny and taxonomy of a rust fungus newly found on *Lygodium* in Thailand

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**Purpose:** A rust fungus was found on a primitive fern, *Lygodium flexuosum*, in Thailand. As the only rust fungus on *Lygodium* spp., *Puccinia lygodii* was previously known in the Americas. This study aimed at clarifying the phylogeny and taxonomy of the newly found *Lygodium* fungus in Thailand.

**Methods:** We carried out morphological observation of its uredinial stage by light and scanning electron microscopy and molecular phylogenetic analyses based on ITS and LSU regions. We also compared the Thai fungus with *P. lygodii*.

**Results and conclusions:** Uredinia of the Thai fungus were Milesia-type with peridium and occurred on the abaxial surface of a host leaf. Urediniospores wall was echinulate without smooth areas. Morphological features of uredinial stage of the Thai fungus were similar to that of *P. lygodii* in having Milesia-type uredinia and echinulate urediniospores. However, the Thai fungus was distinguished from *P. lygodii* that has smooth areas on the surface of urediniospores. In addition to morphological experiments, we were able to determine ITS and LSU partial sequences of the Thai fungus. Molecular phylogenetic analyses revealed that the Thai fungus positioned in a *Milesina* clade, one of the fern rust genera. The Thai fungus positioned distantly from *P. lygodii* in a phylogram generated. We concluded that the Thai fungus should be classified in the genus *Milesina*.