

TITLE: A PROBABLE NEW SPECIES OF *Tulasnella* FROM THE ROOTS OF BRAZILIAN ORCHIDS

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ABSTRACT:

Mycorrhizal fungi are essentials for orchids seeds germination due to limited food reserves on seeds. Therefore, the available of compatibles symbionts can have a straight impact on distribution and conservation of species. The genus *Tulasnella* is often observed as mycorrhizal with orchids in temperate and tropical species, and several isolates have been related by increasing seeds germination and seedlings growth. During a survey of mycorrhizal fungi associated with Brazilian orchids *Cattleya cinnabarina*, *C. caulescens* and *C. jongheana* in Minas Gerais - Brazil, two probables new *Tulasnella* species were isolated. *Cattleya caulescens* and *C. jongheana* are included in the "Livro Vermelho da Flora do Brasil". Asymptomatic roots were collected and brought to the Laboratório de Associações Micorrízicas, DMB/UFV, washed with tap water, surface sterilized and cut into fragments of 2-3 mm. The root fragments were observed under stereomicroscope to confirmation of mycorrhizal colonization, thus fragments containing pelotons were selected and transferred to PDA medium and incubated at 25 °C. The isolates supposedly belonging to the genus *Tulasnella* were cultivated for morphological characterization and molecular analysis. Images were obtained through microscope equipped with digital camera. Genomic DNA was extracted from mycelium grown on PDA plates, the ITS region was amplified and sequenced. The sequences were analyzed and compared to the GenBank database (NCBI) and Bayesian inference analyses were performed. Forty-five isolates of genus *Tulasnella* were obtained: eleven from *C. jongheana* roots, fourteen from *C. caulescens* and twenty from *C. cinnabarina*. Bayesian Inference revealed that *Tulasnella* isolates from *C. caulescens* and *C. cinnabarina* belong to *T. calospora*, while *Tulasnella* isolates from *C. jongheana* not cluster with any other species. It is known that *T. calospora* can establish *in vitro* symbiotic association with an extensive variety of orchids species. *Tulasnella* sp.1 is closely related to *T. assymetrica*, *T. albida* and *T. pruinosa*, whereas *Tulasnella* sp.2 was arranged in a basal position with respect to the group made up of sequences representing *Tulasnella* sp.1. The new species will be proposed as defined in the International Code of Nomenclature for Algae, Fungi and Plants. The knowledge about mycorrhizal partners is essential for conservation of orchid populations, so these results have direct implications for the preservation of species studied.

Keywords: Tulasnellaceae, phylogeny, biodiversity conservation, Orchidaceae

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