Euphorbia hirta L. a new host record of *Oidium* species from Nepal.

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CONFLICT OF INTEREST: None

ABSTRACT

Euphorbia hirta L. which was found parasitized by the *Oidium* species (imperfect stage of Erysiphales), on the leaves, is considered as a new host record for the fungus. It was collected in the premises of Nepal Academy of Science and Technology (NAST), Khumaltar, Nepal The description of the fungus and distribution is provided here with.

Keywords: Erysiphales, *Oidium, Podosphaera, Euphorbia,* Nepal

1. INTRODUCTION

Very few authors have contributed their findings on the powdery mildews from various places of Nepal (Adhikari 2009, 2012ab, 2014, 2017, 2020abc). In addition, notably they are Adhikari *et al.* (1997, 2001, 2006, 2018), Bhatta (1966), Khadka & Shah (1967), Khadka, Shah & Lawat (1968), Lama (1976, 1977), Manandhar & Shah, (1975), Pandey & Adhikari (2005), Parajuli *et al.* (1999, 2000), Pawsey (1989), Sin *et al.* (2018), Singh (1968) and Singh & Nisha (1976). The check reference list to the previous reports and additions can be found in *'Researches on the Nepalese mycoflora-3: Erysiphales from Nepal'* (Adhikari 2017) and *'Researches on the Nepalese mycoflora- 4* (Adhikari 2020).

U. Braun and R. T. A. Cook (2012) in *Taxonomic manual of the Erysiphales (Powdery Mildews). CBS Biodiversity Series 11,* have done tremendous work in the order Erysiphales resulting vast changes in nomenclature and taxonomy of the species in a new horizon based on molecular phylogeny and morphological characters.

2. MATERIALS AND METHODS

The present study has been based on recent collection, which was found in the premises of Nepal Academy of Science and Technology (NAST), Khumaltar, Nepal

Photographs were taken. The specimens were examined in the laboratory. The host parasitized by the fungus was identified as *Euphorbia hirta* L. The identification of the fungal species was based on monographs of U, Braun & R. T. A. Cook (2012). Moreover the specimen was sent to Prof. U. Braun, Germany and Prof. T. Tokamatsu, Japan, for authentic identification. The host collected was recorded as new for this powdery mildew in Nepal. The specimens gathered are housed in National Herbarium & Plant Lab (KATH), Godawari and Martin-Luther-Universität, Germany. The microscopic description and distribution fungus in the globe has been provided below.

DESCRIPTION OF SPECIES

***Podosphaera xanthii* (Castagne) U. Braun & Shishkoff** in Meeboon J, Hidayat I, Takamatsu S 2016 – Notes on powdery mildews (Erysiphales) in Thailand I. *Podosphaera* sect. *Sphaerotheca.Plant Pathology & Quarantine* 6(2), 142–174, Fig. (below)

Syn. *Podosphaera euphorbiae-hirtae* (U. Braun & Somani) U. Braun & S. Takam., *Schlechtendalia4:* 28, 2000 [≡ *Sphaerotheca euphorbiae-hirtae* U. Braun & Somani, *Mycotaxon25*: 263, 1986; = *S. fuliginea* auct. p.p.; = *S. euphorbiae* auct. p.p.; Anamorph: *Oidium euphorbiae-hirtae* J.M. Yen, *Rev. Mycol.* (Paris) 31(4): 296, 1966; = *O. pedilanthi* J.M. Yen, *Cah. Pacifique*11: 104, 1967; = *O. pedilanthi* R.L. Mathur, B.L. Mathur & Bhargavan, *Indian Phytopathol.*; 24(1): 63, 1971; = *Oidium cyparissiae* auct. p.p.; = *Acrosporium cyparissiae* auct. p.p.].

Mycelium on stems and leaves, often covering the entire lower surface of leaves, white to greyish sometimes turning into brown, effuse, thin to dense. walls smooth to rough; hyphae branched, substraight to wavy, septate, thin-walled, smooth, hyaline to subhyaline, 3–9 µm wide; hyphal appressoria sometimes poorly developed, indistinct to nipple-shape, solitary; conidiophores erect, straight to flexuous, arising from the upper surface of hyphal mother cells, single or occasionally two on a hyphal cell, 90–160× 10–17.5 µm; foot cells cylindrical, straight, 25–78× 11–16 µm, sometimes slightly constricted at the basal septum or slightly swollen at the base, followed by 1–4 shorter cells, forming 3 – 4conidia chains, with a basal septum at the branching point of the mycelium; conidia ellipsoid-ovoid to doliiform, rarely cylindrical, 26–38 × 13–40 µm with conspicuous fibrosin bodies. Chasmothecia not found.

Examination of specimen – *Oidium* sp. parasitic on leaves of *Euphorbia hirta* L., Nepal Academy of Science and Technology

Plant *Euphorbia hirta* L. Mycelium and conidia (microphotographs 10 x 40) of the fungus

(NAST), Khumaltar, Lalitpur, Nepal. 2077.6.22 (2020.10. 8). MK Adhikari no. 2077.6. Host is new to Nepal.

Distribution - The fungus is common in Asiatic region. The host is distributed in between Tropical (150m) and Temperate (1500 - 2000m) region in Nepal.

COMMENTS

The previous studies on Nepalese species include *Oidium cyparissiae* Syd. parasitic on *Euphorbia heterophylla* (=*Euphorbia geniculata*), TC.College; on *Euphorbia hirta*, Balaju, Kathmandu (Singh 1968) and Malepatan, Pokhara (Lama 1976). The book on Erysiphales from Nepal published in 2017 (Adhikari 2017) records it as doubtful species (after U. Braun & R. T. A. Cook 2012).

Podospaera xanthii [= *Podosphaera phaseoli* (Z.Y. Zhao) U. Braun & S. Takam.,] was reported parasitic on *Macrotyloma uniflorum* (Lam.) Verdc. from Bhanimandal, Lalitpur [erroneously called as *Dolichos biflorus; Dolichos uniflorus* and written as *Phaseolus acontifolius* (by Rajbhandari 1976 in Adhikari 2017)].This species was reported as *Sphaerotheca fuliginea* (Schltdl.:Fr.) Poll. on *Macrotyloma uniflorum* and *Erysiphe cichoracearum* DC. parasitic on leaves of *Coreopsis* sp., *Calendula officinalis* L., *Bidenspilosa* L. *Siegesbeckia orientalis* L. and *Vignaungulata* (L). Walp.from Kathmandu valley (Adhikari 2014, 2020)

According to U. Braun and R. T. A. Cook (2012) several fungus species are known to parasitize Euphorbia species [*Pseudoidium poinsettiae* (U. Braun, Minnis & Yáñez- Morales) U. Braun, Minnis & Yáñez-Morales on *Euphorbia pulcherrima* and *Erysiphe euphorbiae* on *Euphorbia hypericifolia. Chamaesycehirta, Euphorbia corollata, E. heterophylla, E. hirta, E. komaroviana, E. savaryi, E. serpens* (= *E. serpyllifolia*) and *Jatropha gossypifolia*], which are insufficiently known. *Fibroidium euphorbiicola* (Y.S. Paul & J.N. Kapoor) U. Braun & R.T.A. Cook, (syn. *Euoidium euphorbiicola* Y.S. Paul & J.N. Kapoor, on *Euphorbia pilulifera*, India., which differ greatly from the present species.

According to U. Braun and R. T. A. Cook (2012) the phylogenetic tree and DNA sequence of this fungus is identical to those of *Podosphaera* on *Euphorbia hirta* from Thailand. So based on the phylogenetic tree and molecular examinations *Podosphaera euphorbiae-hirtae* is treated as synonym of *Podosphaera xanthii.* In this species the conidia are formed in chains. The conidia likely contains fibrosin-bodies when fresh. This species is very common in Asia on *Euphorbia hirta* and *E. tithymaloides.*

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