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Research Article

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Uromyces euphorbiae Cooke & Peck, A New Rust Fungi (Pucciniales) Record for Turkey.

Uromyces euphorbiae Cooke & Peck, Türkiye için Yeni Bir Pas Mantarı (Pucciniales) Kaydı.

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ABSTRACT

A rust fungi species, *Uromyces euphorbiae* Cooke & Peck (Pucciniaceae) on Euphorbia cheiradenia Boiss. & Hohen. (*Euphorbiaceae*) is reported for the first time from Malatya for Turkey and also on *E. cheiradenia* Boiss. & Hohen. (*Euphorbiaceae*) is reported as a new host species for the *U. euphorbiae* rust fungi. The morphological and microscopical features of this fungi are described with figures.

Key Words

Malatya, New records, Rust fungi, Uredinales.

ÖZ

Bir pas mantarı türü *Uromyces euphorbiae* Cooke & Peck (Pucciniaceae), Euphorbia cheiradenia Boiss. & Hohen. (*Euphorbiaceae*) bitkisi üzerinde Malatya'dan Türkiye için ilk kez kaydedilmiştir ve de *E. cheiradenia* Boiss. & Hohen. (*Euphorbiaceae*) *U. euphorbiae* pas mantarı için yeni bir konakçı olarak tanımlanmıştır. Bu mantarın şekilleri ile morfolojik ve mikroskobik özellikleri toplanan örneklere bağlı olarak tanımlanmıştır.

Anahtar Kelimeler

Malatya, Yeni kayıt, Pas mantarı, Uredinales.

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INTRODUCTION

Rust fungi can be defined as those that complete a period of their life cycle on healthy plant tissues. The genus *Uromyces* (Link) Unger (Pucciniales, Basidiomycota) comprises more than 600 species of rust fungi worldwide, parasitizing monocotyledon and dicotyledon hosts [1,2]. In the case of Turkey, approximately 75 species have been documented [3-8].

Genus *Euphorbia* L. (*Euphorbiaceae*), is one of the three most species-rich genera of flowering plants, comprises ca 2046 species. In Turkey, the genus is represented with a total of 111 taxa [9]. According to literature, aproximately 40 confirmed *Uromyces* species on *Euphorbia* species [10].

Uromyces euphorbiae Cooke & Peck is common macrocyclic rust fungi on different *Acalypha*, *Chamaesyce*, and *Euphorbia* species (*Euphorbiaceae*) worlwide [10]. but there is not any record of *U. euphorbiae* from Turkey.

In the present study, a new rust fungi was reported for the first time from Malatya for Turkey. The purpose of the present study is to make a contribution to the Turkish rust mycobiota.

MATERIALS and METHODS

Fungi samples and the host plants were collected in 2018 from Malatya (Doğanyol) province in Turkey. The host specimens were prepared according to the conventional herbarium techniques. Host plants identified use the Flora of Turkey and the East Aegean Islands [11]. Fungal spores were scraped from dried host specimens. Microphotographs of the spores were taken under a light microscope (Noveks B series 1000). Identification was performed with the aid of literature [12,13]. The current names of fungi were given according to www.indexfungorum.org. Names of host plants and families are given according to http://www.theplantlist.org. Voucher specimens are deposited in Inönü University Herbarium (INU).

RESULTS and DISCUSSION

Basidiomycota R.T. Moore
Ustilaginomycetes Warm.
Pucciniales Caruel
Pucciniaceae Chevall.
Uromyces (Link) Unger

U. euphorbiae Cooke & Peck, Ann. Rep. Reg. Univ. St. N.Y. 25: 90 (1873) (**Figure 1-2**).

Synonyms: *Aecidium tordillense* Speg., Anales Soc. Ci. Argent. 12: 79. 1881.

Nigredo proeminens (DC.) Arthur, N. Am. Flora 7: 259. 1912.

Uredo acalyphae Speg., Bol Acad. Nac. Ci. 29: 149. 1926.

U. euphorbiae var. *minor* Arthur, Bull. Minnesota Acad. Nat. Sei. 2: 28. 1883.

U. myristica Berk. & M.A. Curtis, Grevillea 3: 57. 1874.

U. proeminens DC, Fl. France 2: 235. 1805.

U. pulvinatus Kalchbr. & Cooke, Grevillea 9: 21. 1880.

U. tordülensis Speg., Anales Soc. Ci. Argent. 12: 75. 1881.

Uromyces ellisianus Henn., Hedwigia 37. 269. 1898.

U. tordülensis Speg., Anales Mus. Nac. Hist. Nat. Buenos Aires 6:214. 1899.

U. poinsettiae Tranzschel, Ann. Mycol. 8: 11. 1910.

U. poinsettiae Speg., Bol. Acad. Nac. Ci. 29: 148. 1926.

U. proeminens (DC) Pass., Fung. Eur. No 1795. 1873.

Trichobasis euphorbiaecola Berk. & M.A. Curtis, J. Linn. Soc, Bot. 10: 357. 1869.

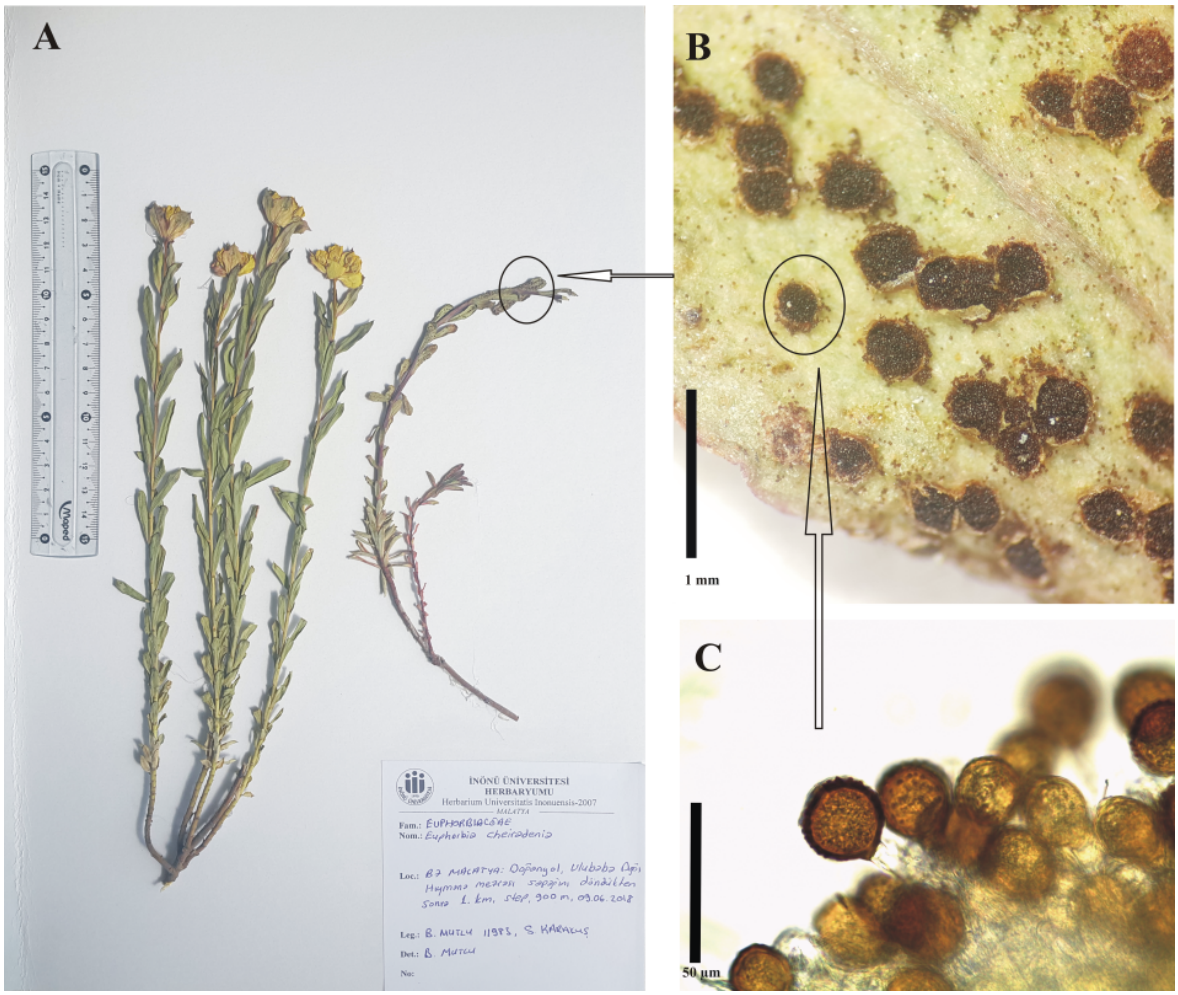

Figure 1. *U. euphorbiae* INU 8058 A.Host Specimen (in herbarium INU). *B. Uredinia* and Telia on leaf (S.M) *C. Urediniospores* and . Teleutospores (L.M).

Uredinia amphigenous, on petiols, on stems, on irregular, scattered or in clusters, 1-5 mm, covered by the epidermis, soon naked, pulverulent, pallid-yellow or brownish. Urediniospores globoid-ellipsoid, 18-26 × 16-24 µm, wall echinulate, 1,5 - 2 µm, brown, with 4-5 equatorial pores. Teleutosori mixed with uredinia but darker. Teleutospores ellipsoid or globoid, 18-28 × 16-24 µm, wall warted, dark brown, 1-2 µm, pore apical with hyaline papillae, pedicels short, hyaline, decidious.

Distribution: On species of *Acalypha, Chamaesyce,* and *EuPhorbia* (*Euphorbiaceae*) Cosmopolitan, widespread in the Americas, Africa, Asia, Europe, and Oceania [10].

Specimens examined – On *E. cheiradenia* Boiss. & Hohen. (*Euphorbiaceae*): TURKEY—B7 Malatya, Doğanyol, Ulubaba Mountain, 1900 m, 09.06.2018, B. Mutlu 11983 & Ş. Karakuş (INU 8058).

Remarks: There are aproximately 40 confirmed *Uromyces* species on *Euphorbia* species (Farr & Rossman 2017). In these species *U. laevis* Körn. on *Euphorbia macroclada* Boiss., *Uromyces Pisi-sativi* (Pers.) Liro on *Euphorbia cyparissias* L. and *Euphorbia esula* subsp. *tommasiniana* (Bertol.) Kuzmanov. (aecidial stage), *U. scutellatus* (Schrank) Lév. on *Euphorbia* sp. and *E. esula* subsp. *tommasiniana* and *U. tinctoriicola* Magnus on *E. condylocarpa* M.Bieb., *E. macroclada*, *E. petrophila* C.A.Mey. and *E. esula* subsp. *tommasiniana* have previously been reported from Turkey [5].

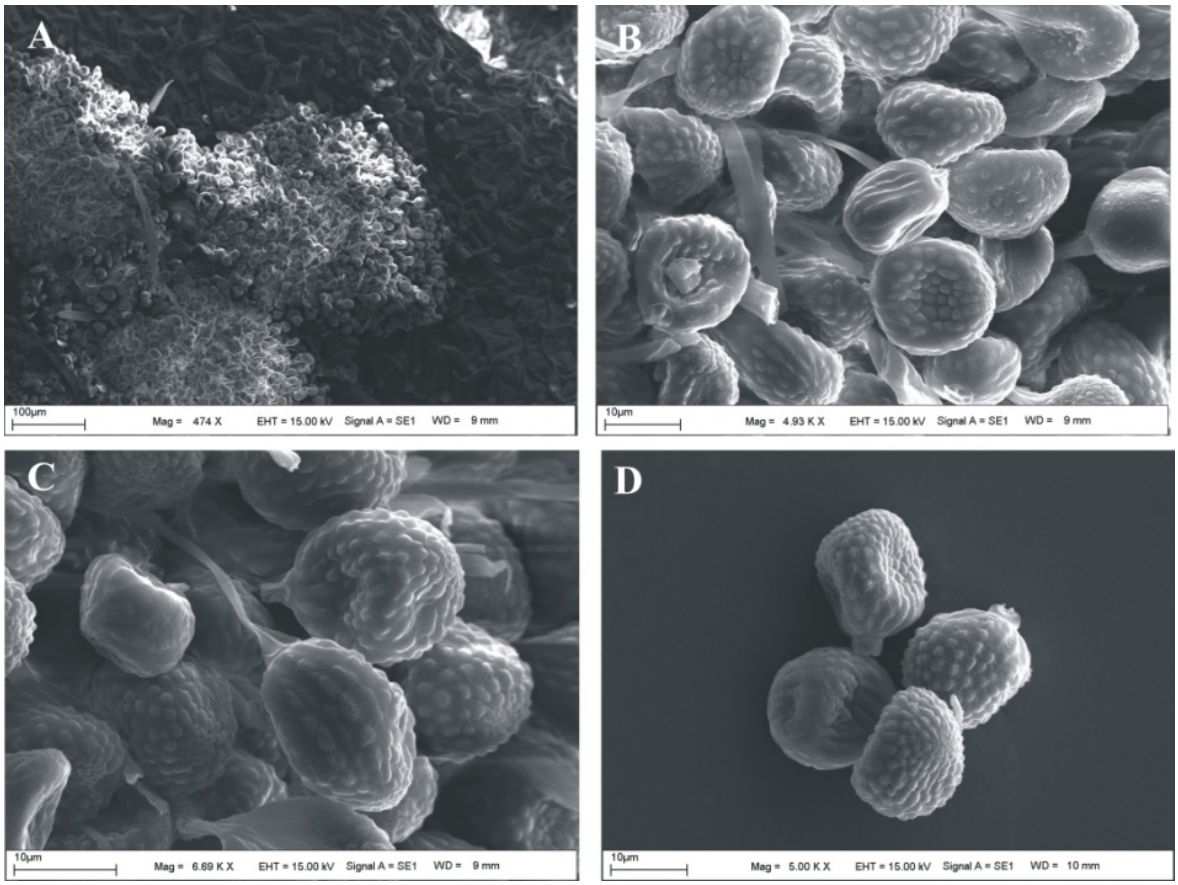

Figure 2. SEM photographs of *U. euphorbiae A. uredinia* and Telia on leaf B. C. D. Teleutospores

Melampsora euphorbiae (Ficinus & C. Schub.) Castagne and *U. tuberculatus* Fuckel are the rust fungi on *E. cheiradenia*. *U. euphorbiae* is distinguished from other *Uromyces* species on *Euphorbia* species by macrocyclic life cycle, dark brown teleutospores and also big warts on teleutospores wall.

With the current study, ***U. euphorbiae*** is reported for the first time from Turkey and also *E. cheiradenia* is reported as a new host species for the ***U. euphorbiae*** rust fungi. The number of Turkish *Uromyces* species will increase approximately to 76.

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