



Checklist of Powdery mildews (*Erysiphales*) in Turkey

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Abstract

This study presents a checklist of powdery mildew fungi (*Erysiphales*) of Turkey together with their known host plants. The checklist enumerates 143 species of *Erysiphales* belonging to 14 teleomorphic and anamorphic genera and it includes 674 host plants species from 322 genera and 72 families.

Key words: fungal diversity, microfungi, powdery mildews, Turkey

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Türkiye'nin Külleme mantarları (*Erysiphales*) kontrol listesi

Özet

Bu çalışma bilenen konakçı bitkileri ile birlikte Türkiye'nin külleme mantarlarının (*Erysiphales*) kontrol listesini içermektedir. Kontrol listesinde 14 teliomorf ve anamorf cinse ait 143 tür *Erysiphales* sıralanmıştır ve 72 familya 322 cins ve 674 konakçı bitki türünü içermektedir.

Anahtar kelimeler: mantar çeşitliliği, mikrofunguslar, külleme mantarları, Türkiye

1. Introduction

Erysiphales (powdery mildews) in *Leotiomycetes* (Ascomycota) are represented by 1 family (*Erysiphaceae*), 16 genera and 873 species (Braun and Cook, 2012). These fungi are widely distributed all over the world and cause diseases on numerous wild and cultivated plants parasitising ca. 10 000 species of Angiosperms only. As a group, powdery mildews are noted for their virulence, causing great losses to crops on a worldwide basis, as well as for their host specificity. The distribution of the *Erysiphales* is cosmopolitan, reaching from tropics to the polar areas. The main geographical regions of the distribution are in the temperate zone of the northern hemisphere (Braun, 1987). So Turkey is in the main distribution area.

The taxonomy of powdery mildew fungi recently underwent extensive revision based on DNA sequence data. Previously, identification was based mainly on the teleomorph (sexual stage) and the morphology of the chasmothecium and chasmothecial appendages. Recently, the classical morphological criteria were supplemented with both scanning electron microscope (SEM) studies of conidial surfaces (Cook et al., 1997) and molecular phylogenetic analyses of nucleotide sequences of the nuclear ribosomal DNA (rDNA) region (primarily due to the numerous papers by Takamatsu with coauthors, e.g.: Takamatsu et al., 1999, 2005a, b; Braun and Takamatsu, 2000; Hirata et al., 2000; Mori et al., 2000a, b; Braun et al., 2001; Takamatsu, 2004; Khodaparast et al., 2012, etc.).

Turkey is a large peninsula situated between south-eastern Europe and Asia and its land surface is about 780,000 km². The country comprises different phytogeographic regions, the Euro-Siberian, Irano-Turanian and the Mediterranean region. Having a number of natural habitats, ranging from Mediterranean, Aegean and Black Sea coasts to towering coastal and interior mountains, from deeply incised valleys to expansive steppes, from fertile alluvial plains

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to arid, rocky hill slopes, Turkey really deserves much more attention. Many floristic studies have shown that Turkey has a rich diversity of species and is an active species-formation center and it is one of the world's most important countries in terms of endemic plants. Due to its topographical and climatic diversity the flora is rich and counts approximately 10.000 vascular plant species. Flora records reveal that there are more than 3000 endemic plants in Turkey, which constitutes 34% of total flora (Güner et al., 2012).

Research studies related to the fungi on the plants began with Magnus, Bornmuller and Bremer in the 1892s–1940s (Magnus, 1899; Bremer et al., 1947). These studies were followed by studies of Göbelez and Karel (Göbelez, 1952; Karel, 1958).

Studies on powdery mildews have been increased in Turkey between the years 1960–1990 (Karaca, 1961; Göbelez, 1962; Oran, 1967; Selik, 1973; Öner and Ekmekçi, 1974; Öner et al., 1974; Baydar, 1975; Uçar and Öner, 1977; Tamer and Öner, 1978; Karaboz and Öner, 1982; Tamer et al., 1987, 1989). Karaca (1961) made first checklist of powdery mildews in Turkey. In these study, there are 32 species of *Erysiphales* on 110 plants determined.

During the the years 1990–2005 many fungal specimens have been collected in Turkey. Some of them belong to the *Erysiphales*. However, powdery mildews have never been extensively studied in Turkey and information on the species and their host plants is scattered in various plant pathological reports and some general fungal lists (Tamer et al., 1990a, 1990b, 1992; 1997; Güven and Tamer, 1993; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 1996, 2001, 2005; Karakaya, 1998a, 1998b, 1998c; Huseyin and Selçuk, 2000; Kurt and Soylu, 2001; Kurt et al., 2004; Sert et al., 2004).

In the last decade, studies on fungi have greatly increased in Turkey. A large number of new records of powdery mildews have been added (Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006; Sert et al., 2006; Kavak, 2007, 2011; Bahçecioğlu and Kabaktepe, 2009; Huseyin et al., 2009; Kırbağ and Kurşad, 2011; Severoğlu and Özyiğit, 2012). Bahçecioğlu et al. (2006) published a new species on *Rubia tinctorum* L. (*Neoerysiphe rubiae* Bahç., U. Braun & Kabakt.) in country.

There were a total of 143 species of *Erysiphales* identified in the country. Basing on the number of potential host plants, we have to conclude that the number of *Erysiphales* species should be much larger here. Thus, further studies on these fungi are required in Turkey.

The aim of this paper is to provide a comprehensive review of the *Erysiphales* and their host range in Turkey. It also facilitates access to the scattered Turkish literature on the topic that may not be readily available to the student of Turkish microfungi.

2. Materials and methods

The checklist was based on published literature on *Erysiphales* in Turkey and own data. The current names of fungi are given according Braun and Cook (2012). Names of host plants and families are given according to <http://www.theplantlist.org/>

Genera, species and subspecies of powdery mildews are listed alphabetically followed by the host plant names, host family and related references. Anamorphic genera were added after teleomorphic taxa. In addition, species names used in the original publications are also shown after the relevant references when these differ from current name of fungi.

3. Results

A total of 143 species of *Erysiphales* were identified and reported from Turkey. The listed fungi belong to ten teleomorphic genera, viz. *Arthrocladiella* (1 species), *Blumeria* (1 species), *Erysiphe* (46 species), *Golovinomyces* (23 species), *Leveillula* (22 species), *Neoerysiphe* (2 species), *Phyllactinia* (18 species), *Pleochaeta* (1 species), *Podosphaera* (20 species), *Sawadaea* (1 species), and four anamorphic genera, i.e. *Euoidium* (1 species), *Fibroidium* (1 species), *Oidiopsis* (3 species), and *Pseudoidium* (3 species).

The recorded *Erysiphales* were found on 674 host species that belong to 322 genera and 72 families.

List of Taxa

Ascomycota Caval.-Sm.

Pezizomycotina O.E. Erikss. & Winka

Leotiomycetes O.E. Erikss. & Winka

Erysiphales H. Gwynne-Vaughan

Erysiphaceae Tul. & C. Tul.

Arthrocladiella Vassilkov

A. mougeotii (Lév.) Vassilkov, Bot. Mater. Otd. Sporov. Rast. Bot. Inst. Komarova Akad. Nauk SSSR 16: 112 (1963).

Lycium barbarum L. (*Solanaceae*) (Oran, 1967; Amano, 1986 as *Microsphaera mougeotii* (Lév.) Sacc.). *Lycium chinense* Mill. (Uçar and Öner, 1977; Amano, 1986 as *M. mougeotii*). *Lycium halimifolium* Mill. (Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Uçar and Öner, 1977; Amano, 1986 as *M. mougeotii*). *Lycium vulgare* Dunal (Oran, 1967 as *M. mougeotii*). *Lycium* sp. (Karaca, 1961; Oran, 1967; Amano, 1986 as *M. mougeotii*; Öner et al., 1974 as *Erysiphe polygona* DC.).

Blumeria Golovin ex Speer

B. graminis (DC.) Speer, Sydowia 27 (21–26): 2 (1975).

Aegilops cylindrica Host (*Poaceae*) (Oran, 1967; Amano, 1986 as *Erysiphe graminis* DC). *Aegilops neglecta* Reg. ex Bertol. (Oran, 1967; Amano, 1986 as *E. graminis*). *Aegilops peregrina* (Hack.) Maire & Weiller (Amano, 1986 as *E. graminis*). *Aegilops triuncialis* L. (Karaca, 1961; Göbelez, 1962; Oran, 1967; Tamer et al., 1987, 1992 as *E. graminis*). *Aegilops* sp. (Güven and Tamer, 1993 as *E. graminis*; Bahçecioğlu et al., 2006). *Agropyron cristatum* (L.) Gaertn. (*Poaceae*) (Göbelez, 1962; Karaca, 1961; Oran, 1967; Baydar, 1975; Amano, 1986 as *E. graminis*). *Agrostis stolonifera* L. (*Poaceae*) (Oran, 1967; Amano, 1986 as *E. graminis*). *Alopecurus myosuroides* Huds. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Alopecurus pratensis* L. (Amano, 1986 as *E. graminis*). *Apera spica-venti* (L.) Beauv. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Arrhenatherum elatius* (L.) P. Beauv. ex J. Presl & C. Presl. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Avena barbata* Pott. ex Link (*Poaceae*) (Karaca, 1961; Oran, 1967; Uçar and Öner, 1977; Tamer and Öner, 1978; Karaboz and Öner, 1982; Amano, 1986 as *E. graminis*; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006). *Avena fatua* L. (Amano, 1986 as *E. graminis*). *Avena sativa* L. (Bremer et al., 1947; Göbelez, 1952, 1962; Karaca, 1961; Oran, 1967; Amano, 1986 as *E. graminis*). *Avena sterilis* L. (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Öner et

al., 1974; Amano, 1986 as *E. graminis*). *Brachypodium pinnatum* (L.) P. Beauv. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Brachypodium sylvaticum* (Huds.) P. Beauv. (Amano, 1986 as *E. graminis*). *Bromus alopecuroides* Poir. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Bromus arvensis* L. (Oran, 1967; Amano, 1986 as *E. graminis*). *Bromus commutatus* Schrad. (Amano, 1986 as *E. graminis*). *Bromus danthoniae* Trin. (Bahçecioğlu and Yıldız, 1996). *Bromus hordeaceus* L. (Karaboş and Öner, 1982 as *E. graminis*). *Bromus inermis* Leyss. (Amano, 1986 as *E. graminis*). *Bromus japonicus* Thunb. (Kabaktepe and Bahçecioğlu, 2006). *Bromus madritensis* L. (Oran, 1967; Amano, 1986 as *E. graminis*). *Bromus ramosus* Huds. (Amano, 1986 as *E. graminis*). *Bromus scoparius* L. (Amano, 1986 as *E. graminis*). *Bromus secalinus* L. (Amano, 1986 as *E. graminis*). *Bromus sterilis* L. (Oran, 1967; Tamer et al., 1987 as *E. graminis*). *Bromus tectorum* L. (Oran, 1967; Amano, 1986 as *E. graminis*). *Bromus* sp. (Uçar and Öner, 1977; Amano, 1986 as *E. graminis*). *Catapodium rigidum* (L.) C.E. Hubb. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Cynodon dactylon* (L.) Pers. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Dactylis glomerata* L. (*Poaceae*) (Oran, 1967; Amano, 1986 as *E. graminis*; Kabaktepe and Bahçecioğlu, 2006). *Digitaria sanguinalis* (L.) Scop. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Elymus elongatus* (Host) Runemark ssp. *turcicus* (P.E. McGuire) Melderis (*Poaceae*) (Bahçecioğlu and Yıldız, 2005). *Elymus hispidus* (Opiz) Melderis (Oran, 1967; Amano, 1986 as *E. graminis*; Bahçecioğlu and Yıldız, 2005). *Elymus repens* (L.) Gould (Baydar, 1975; Güven and Tamer, 1993 as *E. graminis*). *Festuca arundinacea* Schreb. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Festuca pratensis* Huds. (Amano, 1986 as *E. graminis*). *Festuca* sp. (Amano, 1986 as *E. graminis* on *F. arvernensis* Auquier and *F. ovina* L.). *Holcus lanatus* L. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Holcus* sp. (Amano, 1986 as *E. graminis* on *H. mollis* L.). *Hordeum bulbosum* L. (*Poaceae*) (Oran, 1967; Amano, 1986; Tamer et al., 1992 as *E. graminis*; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006; Kırbağ and Kürşat, 2011). *Hordeum distichon* L. (Oran, 1967; Baydar, 1975; Amano, 1986 as *E. graminis*). *Hordeum murinum* L. (Karaca, 1961; Oran, 1967; Uçar and Öner, 1977; Tamer and Öner, 1978; Amano, 1986 as *E. graminis*; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Severoğlu and Özyiğit, 2012). *Hordeum murinum* subsp. *leporinum* (Link) Arcang. (Amano, 1986 as *E. graminis*). *Hordeum spontaneum* K. Koch (Amano, 1986 as *E. graminis*; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 1996). *Hordeum vulgare* L. (Bremer et al., 1947; Göbelez, 1952, 1962; Amano, 1986 as *E. graminis*). *Hordeum* sp. (Öner et al., 1974; Amano, 1986 as *E. graminis* on *H. secalinum* Schreb.; Güven and Tamer, 1993 as *E. graminis*). *Lolium multiflorum* Lam. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Lolium perenne* L. (Amano, 1986 as *E. graminis*). *Lolium persicum* Boiss. & Hohen. (Amano, 1986 as *E. graminis*). *Lolium temulentum* L. (Amano, 1986 as *E. graminis*). *Phalaris arundinacea* L. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Phalaris canariensis* L. (Uçar and Öner, 1977; Amano, 1986 as *E. graminis*). *Phleum phleoides* (L.) H. Karst. (*Poaceae*) (Tamer and Öner, 1978; Amano, 1986 as *E. graminis*). *Phleum pratense* L. (Amano, 1986 as *E. graminis*). *Phragmites australis* (Cav.) Trin. ex Steud. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Poa annua* L. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Poa bulbosa* L. (Oran, 1967; Amano, 1986; Tamer et al., 1987 as *E. graminis*; Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011). *Poa nemoralis* L. (Amano, 1986 as *E. graminis*). *Poa pratensis* L. (Amano, 1986 as *E. graminis*). *Poa trivialis* L. (Amano, 1986 as *E. graminis*). *Poa* sp. (Amano, 1986 as *E. graminis* on *P. glauca* Vahl). *Secale cereale* L. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Secale montanum* Guss. (Amano, 1986 as *E. graminis*). *Setaria italica* (L.) Beauv. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Setaria viridis* (L.) P. Beauv. (Amano, 1986 as *E. graminis*). *Taeniatherum caput-medusae* (L.) Nevski (*Poaceae*) (Oran, 1967; Amano, 1986 as *E. graminis*). *Trisetaria panicea* (Lam.) Paunero (*Poaceae*) (Amano, 1986 as *E. graminis*). *Trisetum flavescens* (L.) P. Beauv. (*Poaceae*) (Amano, 1986 as *E. graminis*). *Triticum aestivum* L. (*Poaceae*) (Bremer et al., 1947; Göbelez, 1952, 1962; Karaca, 1961; Oran, 1967; Öner et al., 1974; Baydar, 1975; Amano, 1986 as *E. graminis*). *Triticum dicoccum* (Schrank) Schübl. (Amano, 1986 as *E. graminis*). *Triticum durum* Desf. (Oran, 1967; Baydar, 1975; Amano, 1986 as *E. graminis*). *Triticum turgidum* L., *Triticum* sp. (Amano, 1986 as *E. graminis* on *T. compactum* Host and *T. spelta* L.).

Erysiphe R. Hedw. ex DC.

E. adunca (Wallr.) Fr., Syst. mycol. (Lundae) 3 (1): 245 (1829).

Populus alba L. (*Salicaceae*) (Amano, 1986 as *Uncinula salicis* (DC.) G. Winter). *Populus × canadensis* Moench (Amano, 1986 as *U. salicis*). *Populus nigra* L. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Oran, 1967; Bahçecioğlu and Işıloğlu, 1995 as *U. adunca* (Wallr.) Lév.; Amano, 1986 as *U. salicis*). *Populus tremula* L. (Karaca, 1961; Oran, 1967 as *U. adunca*; Amano, 1986 as *U. salicis*). *Salix aegyptica* L. (*Salicaceae*) (Amano, 1986 as *U. salicis*). *Salix alba* L. (Amano, 1986 as *U. salicis*). *Salix babylonica* L. (Severoğlu and Özyiğit, 2012 as *U. salicis*). *Salix caprea* L. (Amano, 1986 as *U. salicis*). *Salix purpurea* L. (Amano, 1986 as *U. salicis*). *Salix* sp. (Karaca, 1961 as *U. adunca*).

E. alphitoides (Griffon & Maubl.) U. Braun & S. Takam., Schlechtendalia 4: 5 (2000).

Castanea sativa Mill. (*Fagaceae*) (Oran, 1967; Amano, 1986 as *Microsphaera alphitoides* Griffon & Maubl.; Öner and Ekmekçi, 1974 as *M. viburni* (Duby) S. Blumer). *Quercus cerris* L. (*Fagaceae*) (Amano, 1986; Severoğlu and Özyiğit, 2012 as *M. alphitoides*). *Quercus coccifera* L. (Amano, 1986 as *M. alphitoides*). *Quercus frainetto* Ten. (Selik, 1973; Severoğlu and Özyiğit, 2012 as *M. alphitoides*). *Quercus hartwissiana* Steven (Amano, 1986 as *M. alphitoides*). *Quercus ilex* L. (Amano, 1986 as *M. alphitoides*). *Quercus infectoria* Oliv. (Tamer and Öner, 1978; Amano, 1986; Tamer et al., 1990a as *M. alphitoides*). *Quercus petraea* Liebl. (Amano, 1986; Oran, 1967 as *M. alphitoides*). *Quercus pubescens* Willd. (Karaca, 1961; Oran, 1967; Selik, 1973; Amano, 1986 as *M. alphitoides*). *Quercus robur* L. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Selik, 1973; Amano, 1986 as *M. alphitoides*). *Quercus robur* subsp. *brutia* (Ten.) O. Schwarz (Oran, 1967; Amano, 1986 as *M. alphitoides*). *Quercus* sp. (Amano, 1986 as *M. alphitoides* on *Q. alba* L.; Bahçecioğlu et al., 2006; Öner and Ekmekçi, 1974; Öner et al., 1974, 1984; Baydar, 1975; Kırbağ and Kürşat, 2011 as *M. alphitoides*).

E. aquilegiae DC. var. *aquilegiae*, Fl. franç., edn 3 (Paris) 6: 105 (1815).

Aquilegia vulgaris L. (*Ranunculaceae*) (Amano, 1986). *Aquilegia* sp. (Oran, 1967; Amano, 1986). *Caltha palustris* L. (*Ranunculaceae*) (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011).

E. aquilegiae var. *ranunculi* (Grev.) R.Y. Zheng & G.Q. Chen, Sydowia 34: 302 (1981).

Adonis aestivalis L. (*Ranunculaceae*) (Amano, 1986 as *Erysiphe ranunculi* Grev.). *Clematis orientalis* L. (*Ranunculaceae*) (Kırbağ and Kürşat, 2011). *Clematis* sp. (Amano, 1986; Severoğlu and Özyiğit, 2012 as *E. polygoni*). *Consolida ajacis* (L.) Schur (*Ranunculaceae*) (Oran, 1967; Amano, 1986 as *E. ranunculi*). *Delphinium dasystachyon* Boiss. & Balansa (*Ranunculaceae*) (Bahçecioğlu and Yıldız, 2005). *Delphinium* sp. (Amano, 1986 as *E. ranunculi* on *D. cultorum* Voss; Oran, 1967 as *E. ranunculi* on *D. elatum* L.). *Ranunculus buhsei* Boiss. (*Ranunculaceae*) (Tamer et al., 1989). *Ranunculus constantinopolitanus* (DC.) d'Urv. (Kırbağ and Kürşat, 2011). *Ranunculus marginatus* d'Urv. (Sert et al., 2006). *Ranunculus repens* L. (Karaca, 1961; Göbelez, 1962;

Oran, 1967; Amano, 1986 as *E. ranunculi*). *Ranunculus sardous* Crantz (Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *E. ranunculi*). *Ranunculus* sp. (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Oran, 1967; Amano, 1986 as *E. ranunculi* on *R. monspeliacus* L.). *Thalictrum flavum* L. (*Ranunculaceae*) (Bahçecioğlu et al., 2006).

E. astragali DC., Fl. franç., edn 3 (Paris) 6: 105 (1815).

Astragalus barbatus Lam. (*Fabaceae*) (Tamer et al., 1997 as *Microsphaera astragali* (DC.) Trevis.). *Astragalus cicer* L. (Amano, 1986 as *M. astragali*). *Astragalus galegiformis* L. (Tamer et al., 1997 as *M. astragali*). *Astragalus ovatus* DC. (Bahçecioğlu et al., 2006 as *M. astragali*). *Astragalus* sp. (Amano, 1986; Bahçecioğlu et al., 2006 as *M. astragali*).

E. atraphaxis (Golovin) U. Braun & S. Takam., Schlechtendalia 4: 5 (2000).

Atraphaxis billardiarii Jaub. & Spach (*Polygonaceae*) (Bahçecioğlu et al., 2006 as *Microsphaera atraphaxis* Schmied.).

E. australiana (McAlpine) U. Braun & S. Takam., Schlechtendalia 4: 17 (2000).

Lagerstroemia indica L. (*Lythraceae*) (Sert et al., 2004; Hüseyin et al., 2009 as *Uncinuliella australiana* (McAlp) R.Y. Zheng & G.Q. Chen; Severoğlu and Özyiğit, 2012 as *Erysiphe lagerstroemiae* E. West).

E. berberidis DC., Fl. franç., edn 3 (Paris) 2: 275 (1805).

Berberis aquifolium Pursh (*Berberidaceae*) (Amano, 1986; Severoğlu and Özyiğit, 2012 as *Microsphaera berberidis* (DC.) Lév.). *Berberis crataegina* DC. (Göbelez, 1962; Oran, 1967; Baydar, 1975; Amano, 1986; Severoğlu and Özyiğit, 2012 as *M. berberidis*). *Berberis thunbergii* DC. (Severoğlu and Özyiğit, 2012 as *M. berberidis*). *Berberis vulgaris* L. (Amano, 1986 as *M. berberidis*). *Berberis* sp. (Karaca, 1961; Oran, 1967; Selik, 1973; Amano, 1986 as *M. berberidis*).

E. betae (Vaňha) Weltzien, Phytopath. Z. 47: 127 (1963).

Beta intermedia Bunge ex Boiss. (*Amaranthaceae*) (Bremer et al., 1947; Göbelez, 1962; Oran, 1967; Amano, 1986 as *Erysiphe communis* (Wallr.) Schltdl.). *Beta vulgaris* L. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Baydar, 1975; Amano, 1986 as *E. communis*; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006). *Beta vulgaris* var. *cruenta* Alef. (Amano, 1986 as *E. communis*). *Ceratocarpus arenarius* L. (*Chenopodiaceae*) (Tamer et al., 1997 as *E. communis*).

E. bremeri U. Braun, Mycotaxon 15: 133 (1982).

Alhagi maurorum Medik. (*Fabaceae*) (Amano, 1986; Bremer et al., 1947; Göbelez, 1962 as *Erysiphe alhagi*).

E. buhrii U. Braun, Česká Mykol. 32(2): 80 (1978).

Dianthus barbatus L. (*Caryophyllaceae*) (Amano, 1986 as *Oidium dianthi* Jacz.). *Dianthus caryophyllus* L. (Oran, 1967 as *Erysiphe polygoni*; Amano, 1986 as *E. communis* (Wallr.) Schltdl. and *O. dianthi*). *Dianthus* sp. (Göbelez, 1962; Oran, 1967 as *E. polygoni*; Amano, 1986 as *E. communis* and *O. dianthi*). *Gypsophila bicolor* (Freyn. & Sint.) Grossh. (*Caryophyllaceae*) (Tamer et al., 1997 as *E. polygoni*). *Gypsophila libanotica* Boiss. (Bahçecioğlu et al., 2006). *Gypsophila paniculata* L. (Amano, 1986). *Silene chaetodonta* Boiss. (*Caryophyllaceae*) (Tamer et al., 1990a as *E. communis*). *Silene chlorifolia* Sm. (Tamer et al., 1990a as *E. communis*). *Silene discolor* Sibth. & Sm. (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011). *Silene spergulifolia* (Willd.) M.Bieb. (Bahçecioğlu et al., 2006). *Silene* sp. (Amano, 1986).

E. catalpae Simonyan, Mikol. Fitopatol. 18(4): 463 (1984).

Catalpa bignonioides Walter (*Bignoniaceae*) (Braun, 1995).

Notes: This species is mentioned only once for the European part of Turkey in one of monographs by U. Braun (1995), but in the more capital works (Braun, 1987; Braun and Cook, 2012) and in the world list of powdery mildews by K. Amano (1986) *E. catalpae* for the country is not given. Nevertheless, we include this fungus in our checklist as very likely to view in Turkey, because the species was described from the adjacent territory (Armenia), and also occurs in other countries of Europe and Asia, for example, in France, Georgia, Iraq, Italy, Romania, Ukraine etc. (Heluta et al., 2009a; Braun and Cook, 2012).

E. caulicola (Petr.) U. Braun, Mycotaxon 15: 135 (1982).

Astragalus odoratus Lam. (*Fabaceae*) (Bahçecioğlu et al., 2006). *Astragalus* sp. (Bahçecioğlu et al., 2006).

E. celtidis (Schwarzman & Kusnezowa) U. Braun & S. Takam., Schlechtendalia 4: 18 (2000).

Celtis australis L. (*Cannabaceae*) (Severoğlu and Özyiğit, 2012 as *Uncinula parvula* Cooke & Peck).

E. coluteae (Kom.) U. Braun & S. Takam., Schlechtendalia 4: 7 (2000).

Colutea arborescens L. (*Fabaceae*) (Oran, 1967 as *Microsphaera coluteae* Kom.; Amano, 1986 as *M. caraganae* Magnus).

E. convolvuli DC., Fl. franç., edn 3 (Paris) 2: 274 (1805).

Calystegia sepium (L.) R. Br. (*Convolvulaceae*) (Oran, 1967; Amano, 1986). *Convolvulus arvensis* L. (*Convolvulaceae*) (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Baydar, 1975; Uçar and Öner, 1977; Tamer and Öner, 1978; Öner et al., 1984; Amano, 1986; Tamer et al., 1990a, 1992; Güven and Tamer, 1993; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 2001, 2005; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006; Kırbağ and Kürşat, 2011; Ülgentürk et al., 2011; Severoğlu and Özyiğit, 2012). *Convolvulus galaticus* Rost. ex Choisy (Bremer et al., 1947; Amano, 1986; Bahçecioğlu et al., 2006). *Convolvulus lanatus* Vahl (Bahçecioğlu et al., 2006; Sert et al., 2006). *Convolvulus pentapetaloides* L. (Sert et al., 2006). *Convolvulus scammonia* L. (Öner et al., 1974; Amano, 1986; Bahçecioğlu et al., 2006). *Convolvulus siculus* L. (Sert et al., 2006). *Convolvulus* sp. (Öner et al., 1984; Amano, 1986; Tamer et al., 1997). *Ipomoea sagittata* Poir. (*Convolvulaceae*) (Sert et al., 2006).

E. crispula (U. Braun) U. Braun & S. Takam., Schlechtendalia 4: 7 (2000)

Astragalus (*Fabaceae*) (Oran, 1967 as *Microsphaera coluteae* Kom.; Bahçecioğlu and Yıldız, 2005 as *M. crispula* U. Braun). *Astragalus cicer* L. (Oran, 1967 as *M. coluteae*). *Astragalus odoratus* (Bahçecioğlu and Yıldız, 2005 as *M. crispula*). *Astragalus spruneri* Boiss. (Bahçecioğlu and Yıldız, 2005 as *M. crispula*).

E. cruciferarum Opiz ex L. Junell, Svensk bot. Tidskr. 61 (1): 217 (1967).

Alyssum hirsutum M. Bieb. (*Brassicaceae*) (Kabaktepe and Bahçecioğlu, 2006). *Alyssum simplex* Rudolph (Bahçecioğlu et al., 2006). *Alyssum szovitsianum* Fisch. & C.A. Mey. (Bahçecioğlu et al., 2006). *Alyssum trichocarpum* T.R. Dudley & Hub.-Mor. (Bahçecioğlu et al., 2006). *Alyssum* sp. (Karaboz and Öner, 1982). *Brassica napus* L. (*Brassicaceae*) (Amano, 1986). *Brassica nigra* (L.) K. Koch (Bremer et al., 1947; Göbelez, 1962; Oran, 1967; Baydar, 1975 as *Erysiphe communis*; Amano, 1986). *Brassica oleracea* L. (Amano, 1986). *Brassica rapa* L. (Amano, 1986). *Capsella bursa-pastoris* (L.) Medik. (*Brassicaceae*) (Amano, 1986). *Crambe orientalis* L. (*Brassicaceae*) (Oran, 1967 as *E. communis*; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Tamer et al., 1997;

Bahçecioğlu and Yıldız 2001). *Descuriana sophia* (L.) Webb ex Prantl (*Brassicaceae*) (Göbelez, 1962; Oran, 1967; Baydar, 1975 as *E. communis*; Amano, 1986; Tamer et al., 1997; Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011). *Diplotaxis* sp. (*Brassicaceae*) (Tamer and Öner, 1978 as *E. communis*; Amano, 1986; Bahçecioğlu et al., 2006). *Erysimum crassipes* Fisch. & C.A. Mey. (*Brassicaceae*) (Oran, 1967 as *E. communis*; Amano, 1986). *Fibigia clypeata* (L.) Medik. (*Brassicaceae*) (Tamer et al., 1987). *Glaucium corniculatum* (L.) Rudolph (*Papaveraceae*) (Amano, 1986 as *E. communis*). *Glaucium* sp. (Oran, 1967; Amano, 1986 as *E. communis*). *Hesperis bicuspidata* (Willd.) Poir. (*Brassicaceae*) (Tamer et al., 1989 as *E. polygoni*). *Isatis tinctoria* L. (*Brassicaceae*) (Bahçecioğlu and Yıldız, 2005). *Lepidium draba* L. (*Brassicaceae*) (Amano, 1986). *Lepidium latifolium* L. (Oran, 1967 as *E. communis*; Amano, 1986). *Lepidium sativum* L. (Bahçecioğlu et al., 2006). *Papaver rhoeas* L. (*Papaveraceae*) (Tamer and Öner, 1978 as *E. polygoni*; Amano, 1986). *Papaver* sp. (Bahçecioğlu et al., 2006). *Peltaria angustifolia* DC. (*Brassicaceae*) (Bahçecioğlu et al., 2006). *Raphanus raphanistrum* L. (*Brassicaceae*) (Öner et al., 1974; Uçar and Öner, 1977 as *E. polygoni*; Amano, 1986). *Rapistrum rugosum* (L.) All. (*Brassicaceae*) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001). *Sinapis alba* L. (*Brassicaceae*) (Amano, 1986; Bahçecioğlu et al., 2006). *Sinapis arvensis* L. (Oran, 1967 as *E. communis*; Amano, 1986; Bahçecioğlu et al., 2006). *Sterigmostemum incanum* M. Bieb. (*Brassicaceae*) (Tamer et al., 1997). *Thlaspi perfoliatum* L. (*Brassicaceae*) (Kabaktepe and Bahçecioğlu, 2006).

E. euonymi DC., Fl. franç., edn 3 (Paris) 6: 105 (1815).

Euonymus europaeus L. (*Celastraceae*) (Göbelez, 1962; Bahçecioğlu and Yıldız, 2005 as *Microsphaera euonymi* (DC.) Sacc.). *Euonymus latifolius* Mill. (Karaca, 1961 as *M. comata* (Wallr.) Lév.; Amano, 1986 as *M. euonymi*). *Euonymus* sp. (Amano, 1986 as *M. euonymi*).

E. euonymicola U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 461 (2012).

Euonymus japonicus Thunb. (Amano, 1986 as *Oidium euonymi-japonici* E.S. Salmon; Severoğlu and Özyiğit, 2012 as *Microsphaeraalni* (Wallr.) G. Winter). *Euonymus* sp. (Severoğlu and Özyiğit, 2012 as *O. euonymi-japonici*).

E. flexuosa (Peck) U. Braun & S. Takam., Schlechtendalia 4: 19 (2000).

Aesculus hippocastanum L. (*Sapindaceae*) (Tozlu and Demirci, 2010; Severoğlu and Özyiğit, 2012).

E. heraclei DC. Fl. franç., edn 3 (Paris) 6: 107 (1815).

Aethusa cynapium L. (*Apiaceae*) (Oran, 1967 as *Erysiphe umbelliferarum* de Bary; Amano, 1986). *Anethum graveolens* L. (*Apiaceae*) (Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Anthriscus nemorosa* (M. Bieb.) Spreng. (*Apiaceae*) (Tamer et al., 1992 as *E. umbelliferarum*; Bahçecioğlu and Yıldız, 2005). *Bilacunaria microcarpa* (M. Bieb.) Pimenov & V.N. Tikhom (*Apiaceae*) (Amano, 1986 as *Oidium* sp.). *Bupleurum aureum* Fisch. ex Hoffm. (*Apiaceae*) (Amano, 1986). *Carum carvi* L. (*Apiaceae*) (Amano, 1986). *Caucalis platycarpus* L. (*Apiaceae*) (Tamer and Öner, 1978 as *E. umbelliferarum*; Amano, 1986). *Conium maculatum* L. (*Apiaceae*) (Amano, 1986). *Daucus carota* L. (*Apiaceae*) (Oran, 1967; Uçar and Öner, 1977; Tamer and Öner, 1978 as *E. umbelliferarum*; Amano, 1986; Kabaktepe and Bahçecioğlu, 2006). *Daucus guttatus* Sibth. & Sm. (Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Eryngium campestre* L. (*Apiaceae*) (Karaca, 1961; Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Eryngium giganteum* M. Bieb. (Kabaktepe and Bahçecioğlu, 2006). *Eryngium kotschy* Boiss. (Bahçecioğlu et al., 2006). *Falcaria vulgaris* Bernh. (*Apiaceae*) (Amano, 1986; Bahçecioğlu et al., 2006). *Heracleum pastinacifolium* K. Koch (*Apiaceae*) (Bahçecioğlu et al., 2006). *Heracleum sphondylium* L. (Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Heracleum* sp. (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011). *Myrrhoides nodosa* (L.) Cannon (*Apiaceae*) (Tamer and Öner, 1978; Tamer et al., 1987 as *E. umbelliferarum*). *Pastinaca sativa* L. (*Apiaceae*) (Tamer et al., 1997). *Petroselinum crispum* (Mill.) A. W. Hill (*Apiaceae*) (Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Physocaulis nodosus* (L.) Tausch (*Apiaceae*) (Amano, 1986). *Pimpinella anisum* L. (*Apiaceae*) (Amano, 1986). *Pimpinella aurea* DC. (Tamer et al., 1997 as *E. umbelliferarum*). *Pimpinella saxifraga* L. (Amano, 1986). *Pseudorhiza pumila* (L.) Grande (*Apiaceae*) (Bahçecioğlu and Kabaktepe, 2009). *Scandix iberica* M. Bieb. (*Apiaceae*) (Kabaktepe and Bahçecioğlu, 2006). *Scandix pecten-veneris* L. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner et al., 1974; Tamer et al., 1990b as *E. umbelliferarum*; Amano, 1986; Bahçecioğlu et al., 2006). *Scandix* sp. (Bahçecioğlu et al., 2006). *Tordylium apulum* L. (*Apiaceae*) (Karaboz and Öner, 1982 as *E. umbelliferarum*). *Tordylium maximum* L. (Karaboz and Öner, 1982 as *E. umbelliferarum*). *Tordylium officinale* L. (Göbelez, 1962; Oran, 1967 as *E. umbelliferarum*; Amano, 1986). *Torilis arvensis* (Huds.) Link (*Apiaceae*) (Öner et al., 1974 as *E. polygoni*; Tamer et al., 1990a as *E. umbelliferarum*; Kabaktepe and Bahçecioğlu, 2006). *Torilis japonica* (Houtt.) DC. (Amano, 1986). *Torilis leptocarpa* (Hochst.) C.C. Towns. (Tamer et al., 1987 as *E. umbelliferarum*). *Torilis leptophylla* (L.) Rchb.f. (Amano, 1986). *Torilis nodosa* (L.) Gaertn. (Karaboz and Öner, 1982 as *E. umbelliferarum*). *Torilis ucranica* Spreng. (Oran, 1967; Tamer and Öner, 1978 as *E. umbelliferarum*; Amano, 1986). *Turgenia latifolia* (L.) Hoffm. (*Apiaceae*) (Bahçecioğlu et al., 2006). *Zosima* sp. (*Apiaceae*) (Bahçecioğlu et al., 2006).

E. howeana U. Braun, Mycotaxon 14(1): 373 (1982).

Oenothera latifolia (Rydb.) Munz (*Onagraceae*) (Uçar and Öner, 1977 as *Erysiphe polygoni*; Amano, 1986 as *E. communis*; Braun, 1995). *Oenothera longiflora* L. (Amano, 1986 as *Oidium* sp.; Braun, 1995).

E. hypophylla (Nevod.) U. Braun & Cunningt., Schlechtendalia 10: 92 (2003).

Quercus petraea (Mattuschka) Liebl. (Kabaktepe and Bahçecioğlu, 2006 as *Microsphaera hypophylla* Nevod.).

E. knautiae Duby, Bot. Gall., edn 2 (Paris) 2: 870 (1830).

Scabiosa argentea L. (*Caprifoliaceae*) (Öner et al., 1984 as *Erysiphe cichoracearum* DC.). *Scabiosa* sp. (Oran, 1967; Amano, 1986 as *E. communis*; Braun, 1995).

E. lonicerae DC., Fl. franç., edn 3 (Paris) 6: 107 (1815).

Lonicera caprifolium L. (*Caprifoliaceae*) (Karaca, 1961; Amano, 1986 as *Microsphaera lonicerae* (DC.) G. Winter). *Lonicera* sp. (Severoğlu and Özyiğit, 2012 as *M.alni*).

E. limonii L. Junell, Svensk bot. tidskr. 61: 225 (1967).

Limonium gmelinii (Willd.) Kuntze (*Plumbaginaceae*) (Bahçecioğlu and Yıldız, 2005).

E. lycopsidis R.Y. Zheng & G.Q. Chen, Sydowia 34: 234 (1981).

Alkanna megacarpa A. DC. (*Boraginaceae*) (Tamer et al., 1992 as *Erysiphe horridula* (Wallr.) Rabenh.). *Alkanna orientalis* (L.) Boiss. (Amano, 1986 as *Oidium* sp.). *Alkanna* sp. (Bahçecioğlu et al., 2006). *Anchusa hybrida* Ten. (*Boraginaceae*) (Oran, 1967; Amano, 1986 as *E. horridula*). *Anchusa leptophylla* Roem. & Schult. (Amano, 1986 as *E. horridula*; Bahçecioğlu and

Yıldız, 2005; Kabaktepe and Bahçecioğlu, 2006; Kırbağ and Kürşat, 2011). *Anchusa officinalis* L. (Baydar, 1975; Uçar and Öner, 1977; Amano, 1986 as *E. horridula*). *Anchusa* sp. (Oran, 1967; Amano, 1986 as *E. horridula*; Bahçecioğlu and Yıldız, 2005).

E. mayorii S. Blumer, Beitr. Kryptfl. Schweiz 7(no. 1): 174 (1933).

Cirsium sp. (Asteraceae) (Bahçecioğlu and Yıldız, 2005). *Mulgedium* sp. (Asteraceae) (Amano, 1986 as *Oidium* sp.).

E. necator Schwein., Trans. Am. phil. Soc., New Series: 270 (1834).

Vitis vinifera L. (Vitaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Baydar, 1975; Amano, 1986; Kırbağ and Kürşat, 2011; Severoğlu and Özyiğit, 2012 as *Uncinula necator* (Schwein.) Burrill).

E. ornata (U. Braun) U. Braun & S. Takam., Schlechtendalia 4: 12 (2000).

Betula pendula Roth (Betulaceae) (Severoğlu and Özyiğit, 2012 as *Microsphaera alni*).

E. pisi DC. var. **cruchetiana** (S. Blumer) U. Braun, Nova Hedwigia 34(3&4): 692 (1981).

Ononis spinosa L. (Karaca, 1961; Amano, 1986 as *Erysiphe cruchetiana*; Tamer et al., 1990a as *E. martii* Lév.; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kırbağ and Kürşat, 2011). *Ononis spinosa* subsp. *hircina* (Jacq.) Gams (Fabaceae) (Amano, 1986 as *E. cruchetiana* S. Blumer). *Trifolium ochroleucum* Huds. (Fabaceae) (Bahçecioğlu and Yıldız, 2005). *Trifolium pratense* L. (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011).

E. pisi DC. var. **pisi**, Fl. agen. 2: 614 (1821).

Arachis hypogaea L. (Fabaceae) (Amano, 1986 as *Oidium arachidis* Chorin and *Oidium* sp.; Braun, 1985). *Astragalus atropurpureus* Boiss. & Heldr. (Fabaceae) (Amano, 1986). *Astragalus christianus* L. (Tamer et al., 1987). *Astragalus elongatus* Willd. supsp. *elongatus* (Tamer et al., 1987). *Astragalus leporinus* Boiss. var. *hirsutus* (Past.) Chamber. (Tamer et al., 1987). *Astragalus odoratus* (Bahçecioğlu et al., 2006). *Astragalus oleifolius* DC. (Bahçecioğlu et al., 2006). *Astragalus ponticus* Pall. (Kabaktepe and Bahçecioğlu, 2006). *Astragalus tigridis* Boiss. (Bahçecioğlu and Yıldız, 1996). *Lathyrus emodi* (Fritsch) Ali (Fabaceae) (Amano, 1986 as *Erysiphe communis*). *Lathyrus roseus* Steven (Kabaktepe and Bahçecioğlu, 2006). *Lathyrus* sp. (Bahçecioğlu and Yıldız, 2005). *Lupinus albus* L. (Fabaceae) (Amano, 1986 as *E. communis*). *Lupinus angustifolius* L. (Tamer and Öner, 1978; Amano, 1986 as *E. communis*). *Lupinus* sp. (Amano, 1986 as *E. communis*). *Medicago falcata* L. (Fabaceae) (Bahçecioğlu et al., 2006). *Medicago lupulina* L. (Kabaktepe and Bahçecioğlu, 2006). *Medicago rigidula* (L.) Desr. (Oran, 1967). *Medicago polymorpha* L. (Amano, 1986 as *E. communis*). *Medicago rigidula* (L.) All. (Amano, 1986 as *E. communis*). *Medicago rugosa* Desr. (Bahçecioğlu et al., 2006). *Medicago sativa* L. (Baydar, 1975; Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner et al., 1984; Amano, 1986 as *E. communis*; Tamer et al., 1992). *Medicago* × *varia* Martyn. (Bahçecioğlu et al., 2006). *Medicago* sp. (Amano, 1986 as *E. communis*). *Melilotus neapolitanus* Ten. (Fabaceae) (Kabaktepe and Bahçecioğlu, 2006). *Ononis pusilla* L. (Tamer et al., 1987). *Phaseolus vulgaris* L. (Fabaceae) (Amano, 1986 as *E. communis*). *Pisum sativum* L. (Fabaceae) (Amano, 1986; Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Tamer and Öner, 1978; Amano, 1986). *Sophora alopecuroides* L. (Bahçecioğlu et al., 2006). *Trifolium ochroleucum* Huds. (Fabaceae) (Bahçecioğlu et al., 2006). *Trifolium pratense* L. (Oran, 1967; Baydar, 1975; Kabaktepe and Bahçecioğlu, 2006). *Trifolium* sp. (Tamer et al., 1987). *Vicia cracca* L. (Bahçecioğlu et al., 2006). *Vicia elegans* Guss. (Oran, 1967; Amano, 1986 as *E. communis*). *Vicia ervilia* (L.) Willd. (Oran, 1967; Amano, 1986 as *E. communis*). *Vicia faba* L. (Oran, 1967; Uçar and Öner, 1977; Amano, 1986 as *E. communis*). *Vicia freyniana* (Kabaktepe and Bahçecioğlu, 2006). *Vicia lutea* L. (Amano, 1986 as *E. communis*). *Vicia noeana* Boiss. & Reut. ex Boiss. (Oran, 1967; Amano, 1986 as *E. communis*). *Vicia peregrina* L. (Öner et al., 1984). *Vicia persica* Boiss. (Amano, 1986 as *E. communis*). *Vicia sativa* L. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *E. communis*).

Notes: Affiliation of *Trifolium* species to the host range of *E. pisi* var. *cruchetiana*, and *Melilotus*, *Sophora* and *Trifolium* to the hosts of *E. pisi* var. *pisi* seems to us very doubtful. However, the final decision on the taxonomic place of these records may be made after the additional collection and examination of relevant specimens.

E. platani (Howe) U. Braun & S. Takam., Schlechtendalia 4: 12 (2000).

Platanus occidentalis L. (Platanaceae) (Severoğlu and Özyiğit, 2012 as *Microsphaera alni*). *Platanus orientalis* L. (Sert et al., 2004 as *M. platani* Howe; Kavak, 2007; Severoğlu and Özyiğit, 2012). *Platanus* sp. (Heluta et al., 2013).

E. polygoni DC., Fl. agen. 2: 614 (1821).

Fagopyrum esculentum Moench (Polygonaceae) (Amano, 1986). *Polygonum arenarium* Waldst. & Kit. (Polygonaceae) (Amano, 1986; Tamer et al., 1990b, 1992; Kırbağ and Kürşat, 2011). *Polygonum arenarium* subsp. *pulchellum* (Loisel.) Thell. (Tamer et al., 1997; Bahçecioğlu and Işiloğlu, 1995; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006). *Polygonum arenastrum* Boreau (Öner et al., 1984). *Polygonum aviculare* L. (Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986; Bahçecioğlu and Işiloğlu, 1995; Tamer et al., 1997; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006; Severoğlu and Özyiğit, 2012). *Polygonum bellardii* All. (Oran, 1967; Amano, 1986; Tamer et al., 1997; Kabaktepe and Bahçecioğlu, 2006). *Polygonum bistorta* L. (Bahçecioğlu et al., 2006). *Polygonum convolvulus* L. (Amano, 1986). *Polygonum hydropiper* L. (Oran, 1967; Amano, 1986). *Polygonum lapathifolium* L. (Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986; Bahçecioğlu and Işiloğlu, 1995; Tamer et al., 1997; Bahçecioğlu et al., 2006). *Polygonum maritimum* L. (Oran, 1967; Amano, 1986). *Polygonum persicaria* L. (Amano, 1986; Kabaktepe and Bahçecioğlu, 2006). *Polygonum* sp. (Öner and Ekmekçi, 1974; Baydar, 1975; Uçar and Öner, 1977; Amano, 1986; Bahçecioğlu and Yıldız, 2005). *Rumex acetosa* L. (Polygonaceae) (Uçar and Öner, 1977; Amano, 1986). *Rumex acetosella* L. (Öner and Ekmekçi, 1974 as *Erysiphe cichoracearum*; Uçar and Öner, 1977; Amano, 1986). *Rumex alpinus* L. (Kabaktepe and Bahçecioğlu, 2006). *Rumex angustifolius* Campd. (Bahçecioğlu et al., 2006). *Rumex conglomeratus* Murray (Oran, 1967; Öner et al., 1984; Amano, 1986). *Rumex crispus* L. (Baydar, 1975; Amano, 1986; Tamer et al., 1990a; Bahçecioğlu and Işiloğlu, 1995; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006). *Rumex obtusifolius* L. (Bahçecioğlu et al., 2006). *Rumex orientalis* Bernh. (Amano, 1986 as *Oidium* sp.). *Rumex patientia* L. (Oran, 1967; Öner et al., 1974; Amano, 1986; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006). *Rumex pulcher* L. (Öner et al., 1974; Amano, 1986). *Rumex scutatus* L. (Amano, 1986). *Rumex tuberosus* L. (Tamer et al., 1987; Bahçecioğlu and Işiloğlu, 1995; Bahçecioğlu and Yıldız 2001, 2005; Kırbağ and Kürşat, 2011). *Rumex* sp. (Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner et al., 1974; Amano, 1986).

E. prunastri DC., Fl. franç., edn 3 (Paris) 6: 108 (1815).

- Prunus* × *domestica* L. (Rosaceae) (Öner and Ekmekçi, 1974; Amano, 1986 as *Uncinula prunastri* (DC.) Sacc.). *Prunus spinosa* L. (Oran, 1967; Amano, 1986 as *U. prunastri*). *Prunus* sp. (Karel, 1958; Göbelez, 1962; Oran, 1967; Amano, 1986 as *U. prunastri*).
- E. robiniae** Grev., Fl. edin.: 460 (1824).
Robinia hispida L. (Fabaceae) (Karel, 1958; Göbelez, 1962; Oran, 1967; Selik, 1973; Amano, 1986 as *Erysiphe martii* Lév.; Braun and Cook, 2012). *Robinia pseudoacacia* L. (Öner and Ekmekçi, 1974 as *E. polygoni*; Amano, 1986 as *E. martii*; Braun and Cook, 2012).
- E. sophorae** (Jacq.) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 507 (2012).
Sophora alopecuroides L. (Fabaceae) (Oran, 1967 as *Microsphaera coluteae*; Amano, 1986 as *Erysiphe communis* and *M. coluteae*; Tamer et al., 1997 as *E. martii*; Braun and Cook, 2012).
- E. syringae** Schwein., Trans. Amer. Philos. Soc. 4: 270 (1834).
Syringa vulgaris L. (Oleaceae) (Baydar, 1975 as *Microsphaera loniceriae*). *Syringa* sp. (Amano, 1986 as *M. alni*).
- E. syringae-japonicae** U. Braun & S. Takam., Schlechtendalia 4: 14 (2000).
Syringa vulgaris L. (Oleaceae) (Severoğlu and Özyiğit, 2012 as *Microsphaera alni*; Akata and Heluta, 2015).
- E. thesii** L. Junell, Svensk bot. Tidskr. 61: 216 (1967).
Thesium arvense Horv. (Santalaceae) (Bahçecioğlu et al., 2006).
- E. tortilis** (Wallr.) Link, in Willdenow, Sp. pl., edn 4 6(1): 111 (1824).
Cornus mas L. (Cornaceae) (Amano, 1986; Kabaktepe and Bahçecioğlu, 2006). *Cornus sanguinea* L. subsp. *australis* (C.A. Mey.) Jáv. (Oran, 1967; Amano, 1986).
- E. trifoliorum** (Wallr.) U. Braun, Mycotaxon 112: 175 (2010).
Cytisus sp. (Fabaceae) Amano, 1986 as *Erysiphe communis*; Braun and Cook, 2012). *Galega officinalis* L. (Fabaceae) (Uçar and Öner, 1977 as *E. trifolii* Grev. Amano, 1986 as *E. communis*). *Lathyrus chloranthus* L. (Fabaceae) (Tamer et al., 1990b as *E. martii*). *Lathyrus rotundifolius* Willd. (Tamer et al., 1990b as *E. martii*). *Lathyrus tomentosus* Lam. (Boiss. & Balansa) Czechtz (Oran, 1967; Amano, 1986 as *E. martii*). *Lathyrus* sp. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *E. martii* Lév.). *Lupinus angustifolius* L. (Fabaceae) (Bremer et al., 1947; Göbelez, 1962; Öner et al., 1974 as *E. martii*). *Melilotus albus* Desr. (Fabaceae) (Oran, 1967; Amano, 1986 as *E. martii*). *Melilotus officinalis* (L.) Pall. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986; Tamer et al., 1992 as *E. martii*). *Onobrychis aequidentata* d'Urv. (Fabaceae) (Öner et al., 1974; Tamer and Öner, 1978; Karaboz and Öner, 1982; Amano, 1986 as *E. martii*). *Onobrychis arenaria* (Kit.) DC. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis caput-galli* (L.) Lam. (Tamer and Öner, 1978; Karaboz and Öner, 1982; Amano, 1986 as *E. martii*). *Onobrychis cilicica* Kit Tan & Sorger. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis elata* Boiss. & Balansa (Çelik et al., 2011 as *E. trifolii*). *Onobrychis fallax* Freyn & Sint. ex Freyn var. *longifolia* Aktoklu (Çelik et al., 2011 as *E. trifolii*). *Onobrychis gracilis* Besser (Çelik et al., 2011 as *E. trifolii*). *Onobrychis hajastana* Grossh. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis kotschyana* Fenzl (Çelik et al., 2011 as *E. trifolii*). *Onobrychis lasistanica* Boiss. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis megataphros* Boiss. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis meschetica* Grossh. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis montana* DC. (Amano, 1986 as *E. martii*). *Onobrychis mutensis* Kit Tan & Sorger (Çelik et al., 2011 as *E. trifolii*). *Onobrychis oxyodonta* Boiss. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis pisidica* Boiss. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis podperae* Širj. (Çelik et al., 2011 as *E. trifolii*). *Onobrychis stenostachya* Freyn (Çelik et al., 2011 as *E. trifolii*). *Onobrychis vicifolia* Scop. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967 as *E. martii*; Amano, 1986 as *E. communis*). *Onobrychis* sp. (Bahçecioğlu and Yıldız, 2005 as *Microsphaera trifolii* (Grev.) U. Braun). *Securigera varia* (L.) Lassen (Fabaceae) (Amano, 1986 as *Oidium* sp.). *Trifolium medium* L. (Fabaceae) (Amano, 1986 as *E. communis*). *Trifolium pratense* L. (Oran, 1967 as *E. martii*; Amano, 1986 as *E. communis*; Kırbag and Kürşat, 2011 as *E. martii*; Bahçecioğlu and Yıldız, 2005 as *Microsphaera trifolii*). *Trifolium repens* L. (Amano, 1986 as *E. communis*). *Trifolium* sp. (Amano, 1986 as *E. communis*).
- E. ulmi** Castagne, Cat. pl. Marseille: 492 (1845).
Ulmus glabra Huds. (Ulmaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962 as *Erysiphe clandestina* Biv.; Oran, 1967; Amano, 1986 as *Uncinula clandestina* (Biv.) J. Schröt.). *Ulmus minor* Mill. (Sert et al., 2006 as *U. clandestina*).
- Notes: On the hosts belonging to *Ulmus* L., Braun and Cook (2012) give two variations of *E. ulmi*, var. *ulmi* and var. *ulmi-foliaceae* (Dzhaf.) U. Braun, which are different in the number of spores in the ascus. The last of these was described on *U. minor* from Azerbaijan (Caucasus). Geographically, this region is close to Turkey. In addition, in Central and East Asia this host plant is infected by *E. kenjiana* (Homma) U. Braun & S. Takam. Recently, this species was recorded in Europe (Russia, Ukraine) (Heluta et al., 2009b). It is possible that both of the fungi, *E. ulmi* var. *ulmi-foliaceae* and *E. kenjiana*, can occur in Turkey.
- E. urticae** (Wallr.) S. Blumer, Beitr. Kryptfl. Schweiz 7(no. 1): 224 (1933).
Urtica dioica L. (Urticaceae) (Oran, 1967; Amano, 1986; Tamer et al., 1990a; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006). *Urtica* sp. (Tamer and Öner, 1978).
- E. vanbruntiana** (Gerard) U. Braun & S. Takam., Schlechtendalia 4: 15 (2000).
Sambucus nigra L. (Adoxaceae) (Severoğlu and Özyiğit, 2012 as *Microsphaera grossulariae* (Wallr.) Lév.).
- E. viburni** Duby, Bot. Gall., edn 2 (Paris) 2: 872 (1830).
Viburnum opulus L. (Adoxaceae) (Oran, 1967; Amano, 1986 as *Microsphaera viburni* (Duby) S. Blumer; Braun, 1995 as *M. sparsa* Howe). *Viburnum tinus* L. (Severoğlu and Özyiğit, 2012).
- E. viciae-unijugae** (Homma) U. Braun, Feddes Repert. Spec. Nov. Regni Veg. 92(7-8): 499 (1981).
Lathyrus roseus Steven (Bahçecioğlu and Yıldız, 2005; Kırbag and Kürşat, 2011).
- Golovinomyces** (U. Braun) V.P. Heluta
G. ambrosiae (Schwein.) U. Braun & R.T.A. Cook, in Cook & Braun, Mycol. Res. 113(5): 628 (2009)
Helianthus annuus L. (Asteraceae) (Oran, 1967; Amano, 1986; Öner et al., 1984; Severoğlu and Özyiğit, 2012 as *Erysiphe cichoracearum*). *Zinnia elegans* Jacq. (Asteraceae) (Soylu et al., 2011 as *Golovinomyces cichoracearum* (DC.) V.P. Heluta).
- G. artemisiae** (Grev.) V.P. Heluta, Ukr. bot. Zh. 45(5): 62 (1988).
Artemisia campestris L. (Asteraceae) (Öner et al., 1984 as *Erysiphe cichoracearum*).

G. asterum (Schwein.) U. Braun var. **asterum**, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 302 (2012).

Aster amellus L. (Asteraceae) (Amano, 1986 as *Erysiphe cichoracearum*).

G. asterum var. **moroczkovskii** (V.P. Heluta) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 303 (2012).

Symphotrichum novi-belgii (L.) G.L. Nesom (Asteraceae) (Oran, 1967; Amano, 1986 as *Erysiphe cichoracearum*).

Erigeron sp. (Asteraceae) (Öner et al., 1984 as *E. cichoracearum*).

G. asterum var. **solidaginis** U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 304 (2012).

Solidago virgaurea L. (Asteraceae) (Bahçecioğlu et al., 2006 as *Erysiphe cichoracearum*).

G. biocellatus (Ehrenb.) V.P. Heluta, Ukr. bot. Zh. 45(5): 62 (1988).

Ajuga salicifolia (L.) Schreb. (Lamiaceae) (Bahçecioğlu and Yıldız, 2005 as *Erysiphe biocellata* Ehrenb.). *Lycopus europaeus* L. (Lamiaceae) (Amano, 1986 as *E. biocellata*). *Mentha arvensis* L. (Lamiaceae) (Amano, 1986 as *Oidium* sp.). *Mentha* sp. (Amano, 1986 as *E. biocellata*). *Nepeta nuda* L. (Lamiaceae) (Amano, 1986; Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967 as *E. galeopsidis* DC.; Bahçecioğlu and Yıldız, 2005 as *E. biocellata*). *Prunella* sp. (Lamiaceae) (Bahçecioğlu et al., 2006 as *E. biocellata*). *Salvia kronenburgii* Rech.f. (Lamiaceae) (Tamer et al., 1997 as *E. salviae*). *Salvia limbata* C.A. Mey. (Tamer et al., 1997 as *E. salviae*). *Salvia trichoclada* Benth. (Tamer et al., 1987 as *E. salviae* (Jacq.) S. Blumer). *Salvia verbenaca* L. (Bahçecioğlu et al., 2006 as *E. biocellata*). *Salvia verticillata* L. (Karakaya and Gürbüz, 2011 as *E. biocellata*). *Salvia* sp. (Oran, 1967; Öner et al., 1984; Amano, 1986 as *E. biocellata*). *Teucrium chamaedrys* L. (Lamiaceae) (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011 as *E. biocellata*). *Thymus fallax* Fisch. & C.A. Mey. (Lamiaceae) (Bahçecioğlu et al., 2006 as *E. biocellata*). *Thymus sipyleus* Boiss. (Bahçecioğlu and Yıldız, 2005 as *E. biocellata*). *Ziziphora capitata* L. (Lamiaceae) (Kabaktepe and Bahçecioğlu, 2006 as *E. biocellata*). *Ziziphora* sp. (Oran, 1967 as *E. polygoni*).

G. cichoracearum (DC.) V.P. Heluta, Ukr. bot. Zh. 45(5): 62 (1988).

Calendula sp. (Asteraceae) (Severoğlu and Özyiğit, 2012 as *Erysiphe cichoracearum*). *Chondrilla juncea* L. (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Cicerbita* sp. (Amano, 1986 as *Oidium* sp.). *Cichorium intybus* L. (Asteraceae) (Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner et al., 1974; Amano, 1986; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006; Kırbağ and Kürşat, 2011 as *E. cichoracearum*). *Cichorium* sp. (Oran, 1967; Amano, 1986 as *E. cichoracearum*). *Crepis foetida* L. (Asteraceae) (Karaboz and Öner, 1982 as *E. cichoracearum*). *Crepis* sp. (Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Helichrysum plicatum* DC. (Asteraceae) (Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Hieracium* sp. (Asteraceae) (Kabaktepe and Bahçecioğlu, 2006 as *E. cichoracearum*). *Lactuca mulgedioides* (Vis. & Pančić) Boiss. & Kotschy ex Boiss. & Kotschy. (Asteraceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Lactuca saligna* L. (Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Lactuca sativa* L. (Oran, 1967; Amano, 1986 as *E. cichoracearum*). *Lactuca serriola* L. (Oran, 1967; Amano, 1986; Tamer et al., 1992; Tamer et al., 1997 as *E. cichoracearum* on *Scariola orientalis* (Boiss.) Soják; Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011; Ülgentürk et al., 2011 as *E. cichoracearum*). *Lactuca tuberosa* Jacq. (Asteraceae) (Amano, 1986 as *E. cichoracearum*). *Lactuca* sp. (Öner and Ekmekçi, 1974; Tamer and Öner, 1978; Amano, 1986 as *E. cichoracearum*). *Picris hieracioides* L. (Asteraceae) (Kabaktepe and Bahçecioğlu, 2006 as *E. cichoracearum*). *Picris* sp. (Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Taraxacum campylodes* G.E. Haglund (Amano, 1986 as *E. cichoracearum*). *Taraxacum montanum* (C.A. Mey.) DC. (Asteraceae) (Amano, 1986; Oran, 1967 as *E. cichoracearum*). *Taraxacum* sp. (Kabaktepe and Bahçecioğlu, 2006 as *E. cichoracearum*).

G. cucurbitacearum (R.Y. Zheng & G.Q. Chen) Vokal. & Kliron., Mycotaxon 80: 490 (2001).

Citrullus lanatus (Thunb.) Matsum. & Nakai (Cucurbitaceae) (Oran, 1967; Amano, 1986 as *Erysiphe cichoracearum*). *Cucumis melo* L. (Cucurbitaceae) (Oran, 1967; Öner and Ekmekçi, 1974; Amano, 1986; Kırbağ and Turan, 2005 as *E. cichoracearum*). *Cucumis sativus* L. (Oran, 1967; Öner and Ekmekçi, 1974; Baydar, 1975; Amano, 1986; Kırbağ and Turan, 2005; Kırbağ and Kürşat, 2011 as *E. cichoracearum*). *Cucurbita pepo* L. (Cucurbitaceae) (Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Öner et al., 1974; Baydar, 1975; Uçar and Öner, 1977; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 2005 as *E. cichoracearum*).

G. cynoglossi (Wallr.) V.P. Heluta, Ukr. Bot. Zh. 45(5): 62 (1988).

Buglossoides arvensis (L.) I.M. Johnst. (Boraginaceae) (Oran, 1967; Amano, 1986 as *Erysiphe horridula*). *Caccinia macranthera* Brand (Boraginaceae) (Tamer et al., 1997 as *E. horridula*). *Cerinthe minor* L. (Boraginaceae) (Amano, 1986 as *E. horridula*; Bahçecioğlu and Yıldız, 2005 as *E. cynoglossi* (Wallr.) U. Braun; Karaca, 1961; Oran, 1967 as *E. horridula*). *Echium italicum* L. (Boraginaceae) (Tamer et al., 1992 as *E. horridula*). *Echium plantagineum* L. (Oran, 1967; Amano, 1986 as *E. horridula*). *Lappula* sp. (Boraginaceae) (Amano, 1986 as *E. horridula*). *Lithospermum officinale* L. (Amano, 1986 as *E. horridula*). *Lithospermum* sp. (Göbelez, 1962; Amano, 1986 as *E. horridula*). *Neatostema apulum* (L.) I.M. Johnst. (Boraginaceae) (Karaca, 1961; Oran, 1967; Amano, 1986 as *E. horridula*). *Myosotis arvensis* (L.) Hill (Boraginaceae) (Amano, 1986 as *E. horridula*). *Myosotis sylvatica* Hoffm. (Tamer et al., 1989 as *E. cichoracearum*). *Nonea pulla* DC. (Boraginaceae) (Tamer et al., 1989 as *E. horridula*). *Nonea* sp. (Bahçecioğlu and Yıldız, 2005 as *E. cynoglossi*). *Onosma sericea* Willd. (Boraginaceae) (Amano, 1986 as *E. horridula*).

G. depressus (Wallr.) V.P. Heluta, Ukr. Bot. Zh. 45(5): 62 (1988).

Arctium lappa L. (Asteraceae) (Oran, 1967; Amano, 1986 as *Erysiphe depressa* (Wallr.) Schltdl.). *Arctium minus* (Hill) Bernh. (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006 as *E. depressa*). *Arctium tomentosum* Mill. (Amano, 1986 as *E. depressa*).

G. echinopsis (U. Braun) V.P. Heluta, Ukr. Bot. Zh. 45(5): 62 (1988).

Echinops ritro L. (Asteraceae) (Öner et al., 1984 as *Erysiphe cichoracearum*).

G. fischeri (S. Blumer) U. Braun & R.T.A. Cook, in Cook & Braun, Mycol. Res. 113(5): 628 (2009)

Senecio leucanthemifolius Poir. subsp. *vernalis* (Waldst. & Kit.) Greuter (Asteraceae) (Karaca, 1961 as *Erysiphe fischeri* S. Blumer; Göbelez, 1962 as *E. cruchetiana*; Bremer et al., 1947; Amano, 1986; Bahçecioğlu and Yıldız, 2005; Kabaktepe and

Bahçecioğlu, 2006 as *E. cichoracearum*). *Senecio vulgaris* L. (Karaca, 1961; Oran, 1967; Amano, 1986 as *E. cichoracearum*). *Senecio* sp. (Amano, 1986 as *E. cichoracearum*).

G. hyoscyami (R.Y. Zheng & G.Q. Chen) V.P. Heluta, Ukr. Bot. Zh. 45(5): 62 (1988).

Hyoscyamus reticulatus L. (Solanaceae) (Tamer et al., 1997; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001 as *Erysiphe hyoscyami* R.Y. Zheng & G.Q. Chen).

G. inulae U. Braun & H.D. Shin, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 317 (2012).

Inula aucheriana DC. (Asteraceae) (Tamer et al., 1990a as *Erysiphe cichoracearum*). *Inula conyza* (Griess.) DC. (Kabaktepe and Bahçecioğlu, 2006 as *E. cichoracearum*). *Inula montbretiana* DC. (Tamer et al., 1997; Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Inula peacockiana* (Aitch. & Hemsl.) Korovin (Tamer et al., 1997 as *E. cichoracearum*). *Inula* sp. (Severoğlu and Özyiğit, 2012 as *E. cichoracearum*). *Pulicaria dysenterica* (L.) Bernh. (Oran, 1967; Amano, 1986 as *E. cichoracearum*).

G. macrocarpus (Speer) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 319 (2012).

Achillea millefolium L. (Asteraceae) (Bahçecioğlu et al., 2006 as *Erysiphe cichoracearum*). *Anthemis kotschyana* Boiss. (Asteraceae) (Bahçecioğlu and Yıldız, 2005 as *E. cichoracearum*). *Anthemis* sp. (Severoğlu and Özyiğit, 2012 as *E. sparsa* U. Braun). *Matricaria chamomilla* L. (Asteraceae) (Amano, 1986 as *Erysiphe* sp. and *Oidium* sp.).

G. montagnei U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 321 (2012).

Carduus pycnocephalus L. (Asteraceae) (Bahçecioğlu et al., 2006 as *Erysiphe cichoracearum*). *Centaurea iberica* Trevir. ex Spreng. (Asteraceae) (Tamer et al., 1987 as *E. cichoracearum*). *Centaurea solstitialis* L. (Karaca, 1961; Oran, 1967; Uçar and Öner, 1977; Amano, 1986 as *E. cichoracearum*). *Centaurea virgata* Lam. (Asteraceae) (Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011 as *E. cichoracearum*). *Centaurea* sp. (Oran, 1967; Tamer and Öner, 1978; Amano, 1986 as *E. cichoracearum*). *Cirsium arvense* (L.) Scop. (Asteraceae) (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *E. cichoracearum*). *Cousinia canescens* DC. (Asteraceae) (Tamer et al., 1997 as *E. cichoracearum*). *Cousinia nabelekii* Bornm. (Tamer et al., 1997 as *E. cichoracearum*). *Crupina vulgaris* Pers. ex Cass. (Asteraceae) (Amano, 1986 as *E. cichoracearum*). *Cyanus depressus* (M. Bieb.) Soják (Asteraceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 2001 as *E. cichoracearum*; Bahçecioğlu and Yıldız, 2005; Kırbağ and Kürşat, 2011 as *E. depressa*). *Notobasis syriaca* Cass. (Asteraceae) (Karaboz and Öner, 1982 as *E. cichoracearum*).

Psephellus pergamaceus (DC.) Wagenitz (Asteraceae) (Bahçecioğlu and Yıldız, 2005 as *E. cichoracearum*). *Xeranthemum annuum* L. (Asteraceae) (Oran, 1967; Amano, 1986; Bahçecioğlu et al., 2006 as *E. cichoracearum*).

G. orontii (Castagne) V.P. Heluta, Ukr. Bot. Zh. 45(5): 63 (1988).

Abelmoschus esculentus (L.) Moench (Malvaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *Erysiphe cichoracearum*; Uçar and Öner, 1977; Yigit ve Soylu, 2002 as *E. cichoracearum* on *Hibiscus esculentus* L.; Braun, 1995). *Acanthus dioscoridis* L. (Acanthaceae) (Bahçecioğlu and Işıloğlu, 1995 as *E. orontii* Castagne). *Acanthus mollis* L. (Amano, 1986 as *E. cichoracearum*). *Antirrhinum majus* L. (Plantaginaceae) (Amano, 1986 as *Oidium* sp.). *Begonia maculata* Raddi (Begoniaceae) (Amano, 1986 as *Oidium* sp.). *Begonia* sp. (Amano, 1986 as *Oidium* sp.; Severoğlu and Özyiğit, 2012 as *E. cichoracearum* and *O. begoniae* Puttemans). *Campanula* sp. (Campanulaceae) (Severoğlu and Özyiğit, 2012 as *E. cichoracearum*). *Chrysanthemum* sp. (Asteraceae) (Amano, 1986 as *Oidium* sp.; Güven and Tamer, 1993; Severoğlu and Özyiğit, 2012 as *E. cichoracearum*). *Dahlia* sp. (Asteraceae) (Severoğlu and Özyiğit, 2012 as *E. polygoni*; Severoğlu and Özyiğit, 2012 as *E. cichoracearum*). *Datura stramonium* L. (Solanaceae) (Oran, 1967 as *E. cichoracearum*; Amano, 1986 as *E. cichoracearum*, *O. ambrosiae* Thüm. and *Oidium* sp.). *Galium aparine* L. (Rubiaceae) (Oran, 1967; Tamer and Öner, 1978 as *E. galii* var. *riedliana* (Speer) U. Braun; Amano, 1986 as *E. galii* S. Blumer). *Galium* sp. (Amano, 1986 as *E. galii*). *Humulus lupulus* L. (Cannabaceae) (Amano, 1986 as *E. cichoracearum*). *Linum usitatissimum* L. (Linaceae) (Amano, 1986; Severoğlu and Özyiğit, 2012 as *O. lini* Bondartsev). *Nicotiana tabacum* L. (Solanaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Oran, 1967; Amano, 1986; Usturalı et al., 1997 as *E. cichoracearum*; Göbelez, 1962; Baydar, 1975 as *E. communis*). *Solanum melongena* L. (Solanaceae) (Amano, 1986 as *E. cichoracearum*). *Solanum tuberosum* L. (Amano, 1986 as *O. solani* and *Oidium* sp.). *Viola* sp. (Violaceae) (Amano, 1986 as *E. cichoracearum*).

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Oxalis sp. (Oxalidaceae) (Amano, 1986 as *Leveillula taurica*).

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Astracantha sp. (Fabaceae) (Amano, 1986 as *Leveillula taurica* on *A. florulenta* (Boiss. & Hausskn.) Podlech). *Astragalus gummifer* Labill. (Fabaceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001 as *L. taurica*). *Astragalus lagopoides* Lam. (Bahçecioğlu et al., 2006 as *L. taurica*). *Astragalus ponticus* (Kabaktepe and Bahçecioğlu, 2006 as *L. taurica*). *Astragalus* sp. (Amano, 1986 as *L. taurica*). *Cicer arietinum* L. (Fabaceae) (Amano, 1986 as *L. taurica*). *Securigera varia* (L.) Lassen (Fabaceae) (Amano, 1986; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *L. taurica*). *Ebenus* sp. (Fabaceae) (Bahçecioğlu et al., 2006 as *L. taurica*). *Glycyrrhiza echinata* L. (Fabaceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 1996, 2001 as *L. taurica*). *Glycyrrhiza glabra* L. (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Uçar and Öner, 1977; Amano, 1986; Tamer et al., 1992 as *L. taurica*). *Hedysarum varium* Willd. (Fabaceae) (Bahçecioğlu and Yıldız, 2005 as *L. taurica*). *Laburnum anagyroides* Medik. (Fabaceae) (Karaca, 1961; Oran, 1967; Amano, 1986 as *L. taurica*). *Laburnum* sp. (Bremer et al., 1947; Karaca, 1961; Amano, 1986 as *L. taurica*). *Medicago falcata* L. (Fabaceae) (Amano, 1986; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *L. taurica*). *Medicago sativa* L. (Karel, 1958; Karaca, 1961; Oran, 1967; Öner and Ekmekçi, 1974; Öner et al., 1984; Amano, 1986 as *L. taurica*). *Medicago* × *varia* Martyn (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kırbağ and Kürşat, 2011 as *L. taurica*). *Medicago* sp. (Öner et al., 1974; Amano, 1986 as *L. taurica*). *Onobrychis alba* (Waldst. & Kit.) Desv. (Fabaceae) (Çelik et al., 2011 as *L. taurica*). *Onobrychis altissima* Grossh. (Çelik et al., 2011 as *L. taurica*). *Onobrychis argyrea* Boiss. (Bahçecioğlu and Yıldız, 2005 as *L. taurica*). *Onobrychis atropatana* Boiss. (Çelik et al., 2011 as *L. taurica*). *Onobrychis biebersteinii* Širj. (Çelik et al., 2011 as *L. taurica*). *Onobrychis chorassanica* Bunge ex Boiss. (Çelik et al., 2011 as *L. taurica*). *Onobrychis cyri* Grossh. (Çelik et al., 2011 as *L. taurica*). *Onobrychis galegifolia* Boiss. (Bahçecioğlu et al., 2006 as *L. taurica*). *Onobrychis grandis* Lipsky (Amano, 1986 as *L. taurica*). *Onobrychis hypargyrea* Boiss. (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986 as *L. taurica*). *Onobrychis kachetica* Boiss. & Buhse (Çelik et al., 2011 as *L. taurica*). *Onobrychis lasistanica* (Çelik et al., 2011 as *L. taurica*). *Onobrychis megataphros* Boiss. (Çelik et al., 2011 as *L. taurica*). *Onobrychis meschetica* (Çelik et al., 2011 as *L. taurica*). *Onobrychis montana* DC. (Çelik et al., 2011 as *L. taurica*). *Onobrychis mutensis* (Çelik et al., 2011 as *L. taurica*). *Onobrychis oxydonta* (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Çelik et al., 2011; Kırbağ and Kürşat, 2011 as *L. taurica*). *Onobrychis paujica* Bornm. (Çelik et al., 2011 as *L. taurica*). *Onobrychis pisidica* Boiss. (Çelik et al., 2011 as *L. taurica*). *Onobrychis ptolemaica* (Delile) DC. (Çelik et al., 2011 as *L. taurica*). *Onobrychis radiata* (Desf.) Bieb. (Çelik et al., 2011 as *L. taurica*). *Onobrychis sintenisii* Bornm. (Çelik et al., 2011 as *L. taurica*). *Onobrychis stenostachya* (Çelik et al., 2011 as *L. taurica*). *Onobrychis tournefortii* (Willd.) Desv. (Çelik et al., 2011 as *L. taurica*). *Onobrychis tournefortii* subsp. *cappadocica* (Boiss.) Ponert (Bahçecioğlu and Yıldız, 2005 as *L. taurica*). *Onobrychis viciifolia* Scop. (Bahçecioğlu and Işıloğlu, 1995; Karakaya, 1998b; Bahçecioğlu and Yıldız, 2001, 2005 as *L. taurica*). *Onobrychis* sp. (Çelik et al., 2011 as *L. taurica* on *O. vassilczenkoi* Grossh.). *Ononis spinosa* L. (Fabaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006 as *L. taurica*). *Vicia cracca* L. (Fabaceae) (Bahçecioğlu et al., 2006 as *L. taurica*). *Vicia tenuifolia* Roth (Oran, 1967; Amano, 1986 as *L. taurica*). *Vicia* sp. (Bremer et al., 1947; Oran, 1967; Bahçecioğlu and Yıldız, 2005 as *L. taurica*).

L. picridis (Castagne) Durrieu & Rostam, Cryptog. Mycol. 5(4): 290 (1985) [1984]

Artemisia sp. (Asteraceae) (Bahçecioğlu et al., 2006 as *Leveillula taurica*). *Centaurea aggregata* Fisch. & C.A. Mey. ex DC. (Asteraceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu et al., 2006 as *L. taurica*). *Centaurea calcitrapa* L. (Bremer et al., 1947; Oran, 1967; Amano, 1986 as *L. taurica*). *Centaurea calolepis* Boiss. (Öner et al., 1984 as *L. taurica*). *Centaurea carduiformis* L. (Tamer et al., 1997 as *L. taurica*). *Centaurea iberica* Trevir. ex Spreng. (Tamer et al., 1997 as *L. taurica*). *Centaurea solstitialis* L. (Oran, 1967; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006 as *L. taurica*). *Centaurea virgata* Lam. (Bahçecioğlu et al., 2006 as *L. taurica*). *Centaurea virgata* subsp. *squarrosa* (Boiss.) Gugler (Karaca, 1961; Oran, 1967; Amano, 1986 as *L. taurica*). *Centaurea* sp. (Kabaktepe and Bahçecioğlu, 2006 as *L. taurica*). *Echinops pungens* Trautv. (Asteraceae) (Bahçecioğlu and Yıldız, 2005 as *L. taurica*). *Helichrysum pallasii* Ledeb. (Asteraceae) (Bahçecioğlu et al., 2006 as *L. taurica*). *Lactuca orientalis* (Boiss.) Boiss. (Asteraceae) (Kabaktepe and Bahçecioğlu, 2006 as *L. taurica*). *Lapsana communis* L. (Asteraceae) (Tamer et al., 1997 as *L. taurica*). *Leontodon* sp. (Asteraceae) (Oran, 1967; Amano, 1986 as *L. taurica*). *Picris strigosa* M. Bieb. (Asteraceae) (Öner et al., 1984 as *L. taurica*). *Picris* sp. (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *L. taurica*). *Taraxacum glaucanthum* (Ledeb.) DC. (Asteraceae) (Amano, 1986 as *L. taurica*). *Taraxacum sonchoides* (D. Don) Sch. Bip. (Amano, 1986 as *L. taurica*).

L. rutae (Jacq.) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 205 (2012).

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Abelmoschus esculentus (L.) Moench (Malvaceae) (Bremer et al., 1947; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Uçar and Öner, 1977 as on *Hibiscus esculentus*; Amano, 1986). *Argemone platyceras* Link & Otto (Papaveraceae) (Uçar and Öner, 1977; Amano, 1986). *Asyneuma ekimianum* Kit Tan & Yıldız (Campanulaceae) (Bahçecioğlu et al., 2006). *Asyneuma rigidum* ssp. *graminifolium* Hub.-Mor. (Bahçecioğlu et al., 2006). *Asyneuma* sp. (Bahçecioğlu et al., 2006). *Bupleurum* sp. (Apiaceae) (Oran, 1967; Amano, 1986). *Cannabis sativa* L. (Cannabaceae) (Amano, 1986). *Capparis sicula* Duhamel (Capparaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986). *Capparis spinosa* L. (Bahçecioğlu et al., 2006). *Capsicum annuum* L. (Solanaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Oran, 1967; Amano, 1986). *Catalpa bignonioides* Walter (Bignoniaceae) (Karaca, 1961; Oran, 1967; Amano, 1986). *Cerinthe minor* L. (Boraginaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986; Bahçecioğlu et al., 2006). *Clematis orientalis* L. (Ranunculaceae) (Amano, 1986). *Consolida orientalis* (J. Gay) Schrödinger (Ranunculaceae) (Oran, 1967; Amano, 1986). *Consolida regalis* Gray subsp. *paniculata* (Host) Soó (Oran, 1967; Amano, 1986). *Cucurbita pepo* L. (Cucurbitaceae) (Kabaktepe and Bahçecioğlu, 2006). *Digitalis cariensis* Boiss. (Plantaginaceae) (Öner et al., 1984). *Digitalis ferruginea* L. (Amano, 1986). *Digitalis lamarckii* Ivanina (Kabaktepe and Bahçecioğlu, 2006). *Digitalis grandiflora* Mill. (Karaca, 1961; Oran, 1967; Amano, 1986). *Epilobium parviflorum* Schreb. (Onagraceae) (Oran, 1967; Amano, 1986). *Fuchsia regia* (Vand. ex Vell.) Munz (Onagraceae) (Kavak, 2011). *Glaucium corniculatum* (L.) Rudolph (Papaveraceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Öner et al., 1984; Amano, 1986; Güven and Tamer, 1993; Bahçecioğlu et al., 2006). *Glaucium flavum* Crantz (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006). *Glaucium grandiflorum* Boiss. & A. Huet (Bahçecioğlu et al., 2006). *Glaucium leiocarpum* Boiss. (Bahçecioğlu and Yıldız, 2005). *Helianthemum oelandicum* (L.) DC. subsp. *incanum* (Willk.) G. López (Cistaceae) (Bahçecioğlu and Yıldız, 2005). *Helianthemum* sp. (Bahçecioğlu and Yıldız, 2005). *Heliotropium europaeum* L. (Boraginaceae) (Uçar and Öner, 1977; Tamer and Öner, 1978; Amano, 1986). *Heliotropium* sp. (Amano, 1986). *Hibiscus trionum* L. (Malvaceae) (Karaca, 1961; Oran, 1967; Amano, 1986). *Hyoscyamus* sp. (Solanaceae) (Bahçecioğlu and Yıldız, 2005). *Isatis* sp. (Brassicaceae) (Bahçecioğlu et al., 2006). *Lagenaria siceraria* (Molina) Standl. (Cucurbitaceae) (Amano, 1986). *Lycopersicon esculentum* Mill. (Solanaceae) (Oran, 1967; Amano, 1986; Severoğlu and Özyiğit, 2012). *Peganum harmala* L. (Nitrariaceae) (Karaca, 1961; Oran, 1967; Öner et al., 1984; Amano, 1986; Tamer et al., 1990b; Bahçecioğlu and Yıldız, 2005). *Plumbago europaea* L. (Plumbaginaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Bahçecioğlu et al., 2006). *Polygonum aviculare* L. (Polygonaceae) (Karaca, 1961; Oran, 1967; Amano, 1986). *Potentilla* sp. (Rosaceae) (Oran, 1967; Amano, 1986). *Rumex* sp. (Polygonaceae) (Amano, 1986). *Scabiosa argentea* L. (Caprifoliaceae) (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006). *Scabiosa hispidula* Boiss. (Bahçecioğlu et al., 2006). *Scabiosa micrantha* Desf. (Bahçecioğlu et al., 2006). *Scandix pecten-veneris* L. (Apiaceae) (Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001). *Solanum melongena* L. (Solanaceae) (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Oran, 1967; Amano, 1986; Ozan and Aşkın, 2006). *Solanum tuberosum* L. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Oran, 1967; Amano, 1986). *Tribulus terrestris* L. (Zygophyllaceae) (Amano, 1986). *Vincetoxicum nigrum* Moench (Apocynaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986). *Zygophyllum fabago* L. (Zygophyllaceae) (Karaca, 1961; Oran, 1967; Amano, 1986; Tamer et al., 1997).

Notes: Taxonomic affiliation of *Leveillula* on *Euphorbia* sp. recorded by Amano (1986) is unclear.

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Tropaeolum majus L. (Tropaeolaceae) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986 as *Leveillula taurica*; Braun and Cook, 2012).

L. verbasci (Jacq.) Golovin, Acta Inst. Bot. Komarov. Acad. Sci., Pl. Crypt. ser. 2 10: 296 (1956).

Verbascum cheiranthifolium Boiss. (Bahçecioğlu and Yıldız, 2005 as *Leveillula taurica*). *Verbascum* sp. (Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız, 2001; Bahçecioğlu and Yıldız, 2005 as *L. taurica*; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006).

L. wasseri Voytyuk & V.P. Heluta, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 210 (2012).

Carlina acaulis L. (Asteraceae) (Oran, 1967; Amano, 1986 as *Leveillula taurica*). *Carlina corymbosa* L. (Uçar and Öner, 1977; Amano, 1986 as *L. taurica*). *Carlina involucrata* Poir. (Bahçecioğlu et al., 2006 as *L. taurica*).

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N. galeopsidis (DC.) U. Braun, Schlechtendalia 3: 50 (1999).

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Karaboz and Öner, 1982; Amano, 1986 as *E. galeopsidis*). *Lamium garganicum* L. (Bahçecioğlu and Yıldız, 2005 as *E. galeopsidis*). *Lamium garganicum* subsp. *striatum* (Sm.) Hayek (Oran, 1967; Amano, 1986 as *E. galeopsidis*). *Lamium maculatum* L. (Amano, 1986 as *E. galeopsidis*). *Lamium moschatum* L. subsp. *micranthum* (Boiss.) Mennema (Oran, 1967; Amano, 1986 as *E. galeopsidis*). *Lamium purpureum* L. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *E. galeopsidis*). *Lamium* sp. (Oran, 1967; Karaboz and Öner, 1982; Amano, 1986; Kabaktepe and Bahçecioğlu, 2006; as *E. galeopsidis*). *Marrubium anisodon* K. Koch (*Lamiaceae*) (Tamer et al., 1987). *Marrubium parviflorum* Fisch. & C.A. Mey. (Tamer et al., 1997). *Marrubium vulgare* L. (Bahçecioğlu et al., 2006 as *E. galeopsidis*). *Marrubium* sp. (Öner et al., 1984 as *E. cichoracearum*; Amano, 1986 as *Oidium* sp.). *Phlomis armeniaca* Willd. (*Lamiaceae*) (Tamer et al., 1997). *Phlomis herba-venti* L. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967 as *E. galeopsidis*). *Phlomis herba-venti* subsp. *pungens* (Tamer et al., 1997). *Phlomis tuberosa* L. (Karaca, 1961; Amano, 1986 as *E. galeopsidis*). *Phlomis* sp. (Güven and Tamer, 1993 as *E. galeopsidis*). *Sideritis libanotica* Labill. (*Lamiaceae*) (Bahçecioğlu and Yıldız, 2005 as *E. galeopsidis*). *Sideritis montana* L. (Oran, 1967; Amano, 1986 as *E. galeopsidis*). *Stachys alpina* L. (*Lamiaceae*) (Amano, 1986 as *E. galeopsidis*). *Stachys arvensis* L. (Amano, 1986 as *E. galeopsidis*). *Stachys cretica* L. (Tamer et al., 1990a as *E. galeopsidis*). *Stachys setifera* C.A. Mey. (Bahçecioğlu et al., 2006 as *E. galeopsidis*).

N. rubiae Bahç., U. Braun & Kabakt., Nova Hedwigia 83 (3-4): 490 (2006).

Rubia tinctorum L. (*Rubiaceae*) (Bahçecioğlu et al., 2006).

Phyllactinia Lév.

P. babayanii Simonyan, Mikol. Fitopatol. 18(4): 465 (1984)

Prunus dulcis (Mill.) D.A. Webb (Karaca, 1961; Oran, 1967; Amano, 1986 as *Phyllactinia suffulta* (Rebent.) Sacc.). *Prunus orientalis* (Mill.) Koehne (Bahçecioğlu and Yıldız, 1996).

P. berberidis Palla, Ber. Dt. Bot. Ges. 17: 64 (1899)

Berberis julianae C.K. Schneid. (Severoğlu and Özyiğit, 2012).

P. betulae (DC.) Fuss, Archiv des Vereins für Siebenbürgische Landeskunde, Neue Folge 14(2): 463 (1878)

Betula pendula Roth (Severoğlu and Özyiğit, 2012 as *Phyllactinia corylea* (Pers.) P. Karst.). *Betula pubescens* Ehrh. (Amano, 1986 as *P. suffulta*).

P. carpini (Rabenh.) Fuss, Archiv des Vereins für Siebenbürgische Landeskunde, Neue Folge 14(2): 463 (1878)

Carpinus sp. (*Corylaceae*) (Oran, 1967; Amano, 1986 as *Phyllactinia suffulta*; Braun and Cook, 2012). *Carpinus betulus* L. (Erper et al., 2012 as *P. guttata* (Wallr.) Lév.).

P. catalpae U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 237 (2012).

Catalpa bignonioides Walter (*Bignoniaceae*) (Severoğlu and Özyiğit, 2012 as *Phyllactinia corylea*).

P. corni H.D. Shin & M.J. Park, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 241 (2012)

Cornus mas L. (*Cornaceae*) (Erper et al., 2012 as *Phyllactinia guttata*).

P. enkianthi Z.Y. Zhao, Acta Mycol. Sin. 4(1): 19 (1985)

Rhododendron ponticum L. (*Ericaceae*) (Amano, 1986 as *Phyllactinia suffulta*; Braun and Cook, 2012).

P. fraxini (DC.) Fuss, Archiv des Vereins für Siebenbürgische Landeskunde, Neue Folge 14(2): 463 (1878).

Fraxinus angustifolia Vahl subsp. *syriaca* (Boiss.) Yalt. (*Oleaceae*) (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *Phyllactinia suffulta*). *Fraxinus excelsior* L. (Erper et al., 2010). *Fraxinus* sp. (Braun, 1987).

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Coryloideae (Braun and Cook, 2012). *Corylus avellana* L. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *Phyllactinia suffulta*; Severoğlu and Özyiğit, 2012 as *P. corylea*; Erper et al., 2012).

P. mali (Duby) U. Braun, Feddes Repert. 88(9-10): 657 (1978).

Amelanchier sp. (*Rosaceae*) (Amano, 1986 as *Phyllactinia suffulta*). *Crataegus azarolus* L. var. *aronia* L. (*Rosaceae*) (Oran, 1967; Amano, 1986 as *P. suffulta*). *Crataegus monogyna* Jacq. (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Oran, 1967 as *P. mespili* (Castagne) S. Blumer; Amano, 1986 as *P. suffulta*; Bahçecioğlu and Işıloğlu, 1995; Bahçecioğlu and Yıldız 2001; Kırbağ and Kürşat, 2011; Severoğlu and Özyiğit, 2012 as *P. corylea*). *Crataegus rhipidophylla* Gand. (Oran, 1967 as *P. mespili* and *P. suffulta*). *Crataegus orientalis* Pall. ex M.Bieb. subsp. *szovitsii* (Pojark.) K.I. Chr. (*Rosaceae*) (Bahçecioğlu and Yıldız, 2005 as *P. guttata*). *Crataegus* sp. (Karel, 1958; Karaca, 1961; Göbelez, 1962; Amano, 1986 as *P. suffulta*). *Prunus* sp. (*Rosaceae*) (Bahçecioğlu and Yıldız, 2005 as *P. guttata*). *Pyrus communis* L. (*Rosaceae*) (Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *P. suffulta*; Bahçecioğlu and Yıldız, 1996; Kırbağ and Kürşat, 2011). *Pyrus elaeagnifolia* Pall. (Bahçecioğlu and Yıldız, 2005). *Pyrus syriaca* Boiss. (Bahçecioğlu and Yıldız, 1996). *Rosaceae* (Braun and Cook, 2012).

P. marissalii (Westend.) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 262 (2012).

Acer campestre L. (*Sapindaceae*) (Amano, 1986 as *Phyllactinia suffulta*). *Acer negundo* L. (Amano, 1986 as *P. suffulta*). *Acer platanooides* L. (Severoğlu and Özyiğit, 2012 as *P. corylea*). *Acer* sp. (Braun and Cook, 2012).

P. moricola (Henn.) Homma, Trans. Sapporo nat. Hist. Soc. 11(3): 174 (1930) [1929]

Morus alba L. (*Moraceae*) (Karaca, 1961; Göbelez, 1962; Oran, 1967; Amano, 1986 as *Phyllactinia suffulta*; Erper et al., 2012 as *P. guttata*). *Morus* sp. (Kurt & Soylu, 2001 as *P. guttata*; Braun and Cook, 2012).

P. nivea (Castagne) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 263 (2012).

Ulmus glabra Huds. (Bremer et al., 1947; Karaca, 1961; Karel, 1958; Göbelez, 1962; Oran, 1967 as *Phyllactinia suffulta*; Erper et al., 2012 as *P. guttata*). *Ulmus* sp. (Öner et al., 1984; Amano, 1986 as *P. suffulta*; Braun and Cook, 2012).

P. orbicularis (Ehrenb.) U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 264 (2012).

Fagaceae (Braun and Cook, 2012). *Fagus orientalis* Lipsky (*Fagaceae*) (Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006; Erper et al., 2012 as *Phyllactinia guttata*). *Quercus infectoria* G.Olivier (Severoğlu and Özyiğit, 2012 as *P. corylea*).

P. paliuri U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 265 (2012).

Paliurus spina-christi Mill. (*Rhamnaceae*) (Bremer et al., 1947; Karaca, 1961; Göbelez, 1962; Öner et al., 1984; Oran, 1967; Amano, 1986 as *Phyllactinia suffulta*; Erper et al., 2012 as *P. guttata*). *Paliurus* sp. (Braun and Cook, 2012).

P. pistaciae H.D. Shin & Y.J. Choi, Mycotaxon 87: 219 (2003)

Pistacia terebinthus Mill. (*Anacardiaceae*) (Amano, 1986; Tamer et al., 1990b as *Phyllactinia suffulta*). *Pistacia vera* L. (Amano, 1986 as *P. suffulta*; Braun and Cook, 2012).

P. pyri-serotinae Sawada, Rep. Govt Res. Inst. Dep. Agric., Formosa 49: 84 (1930)

Cotoneaster sp. (*Rosaceae*) (Amano, 1986 as *Phyllactinia suffulta*).

P. roboris (Gachet) S. Blumer, Beitr. Kryptfl. Schweiz 7(no. 1): 389 (1933)

Castanea sativa Mill. (*Fagaceae*) (Amano, 1986 as *Phyllactinia suffulta*). *Fagus sylvatica* L. (Amano, 1986 as *P. suffulta*).

Phyllactinia sp.

Alnus glutinosa (L.) Gaertn. (*Betulaceae*) (Erper et al., 2012 as *Phyllactinia guttata*).

Notes: There are known two *Phyllactinia* species on alders, viz. *P.alni* Y.N. Yu & S.J. Han and *P. alnicola* U. Braun. The first of them is recorded in Asia (China, India, Iran, Israel, Japan, Korea, Far East of Russia) on Asian *Alnus* species. The second is known only in North America and Europe on other alders including *A. glutinosa* (Braun and Cook, 2012). In our case, the fungus is recorded in Asia but on a host plant that has mainly European distribution. Therefore, this record may belong to both *P.alni* and *P. alnicola*. This problem can only be solved after the collection of additional samples.

Pleochaeta Sacc. & Speg.

P. shiraiana (Henn.) Kimbr. & Korf, Mycologia 55(5): 624 (1963)

Celtis australis L. (*Cannabaceae*) (Amano, 1986).

Podosphaera Kunze

P. aphanis (Wallr.) U. Braun & S. Takam., Schlechtendalia 4: 26 (2000).

Agrimonia eupatoria L. (*Rosaceae*) (Bahçecioğlu et al., 2006 *Sphaerotheca aphanis* (Wallr.) U. Braun). *Alchemilla lithophila* Juz. (*Rosaceae*) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. aphanis*). *Alchemilla pectiniloba* Frohner (Hüseyin and Selçuk, 2000 as *S. aphanis*). *Alchemilla vulgaris* L. (Amano, 1986 as *S. macularis* (Wallr.) Magnus). *Aremonia agrimonoides* (L.) DC. (*Rosaceae*) (Amano, 1986 as *S. macularis*). *Eucalyptus* sp. (*Myrtaceae*) (Amano, 1986 as *S. macularis*). *Potentilla anserina* L. (*Rosaceae*) (Amano, 1986 as *S. macularis*). *Rubus sanctus* Schreb. (Sert et al., 2004 as *S. alchemillae* (Grev.) L. Junell). *Sibbaldia* sp. (*Rosaceae*) (Amano, 1986 as *S. macularis* on *Si. procumbens* L.).

P. clandestina (Wallr.) Lév., Annls Sci. Nat., Bot., sér. 3 15: 136 (1851).

Crataegus monogyna Jacq. (*Rosaceae*) (Oran, 1967; Amano, 1986; Severoğlu and Özyiğit, 2012 as *Podosphaera oxyacanthae* (DC.) de Bary). *Crataegus* sp. (Amano, 1986 as *P. oxyacanthae*). *Cydonia oblonga* Mill. (*Rosaceae*) (Bremer et al., 1947; Karel, 1958; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Baydar, 1975; Uçar and Öner, 1977; Tamer and Öner, 1978; Amano, 1986; Güven and Tamer, 1993; Kırbağ and Kürşat, 2011 as *P. oxyacanthae*; Erper et al., 2012 as *Phyllactinia guttata*). *Mespilus germanica* L. (*Rosaceae*) (Amano, 1986 as *P. oxyacanthae*).

P. dipsacacearum (Tul. & C. Tul.) U. Braun & S. Takam., Schlechtendalia 4: 28 (2000).

Cephalaria alpina (L.) Schrad. (*Caprifoliaceae*) (Amano, 1986 as *Sphaerotheca fuliginea* (Schltld.) Pollacci). *Cephalaria setosa* Boiss. & Hohen. (Bahçecioğlu et al., 2006 as *S. dipsacacearum* (Tul. & C. Tul.) L. Junell). *Cephalaria speciosa* Boiss. & Kotschy (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *S. dipsacacearum*). *Cephalaria syriaca* (L.) Schrad. ex Roem. & Schult. (Bremer et al., 1947; Göbelez, 1962; Oran, 1967; Amano, 1986 as *S. fuliginea*; Bahçecioğlu and Işıloğlu, 1995; Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2001, 2005; Bahçecioğlu et al., 2006; Kırbağ and Kürşat, 2011 as *S. dipsacacearum*). *Cephalaria* sp. (Bremer et al., 1947; Oran, 1967; Amano, 1986 as *S. fuliginea*). *Dipsacus fullonum* L. (*Caprifoliaceae*) (Amano, 1986 as *S. fuliginea*). *Dipsacus laciniatus* L. (Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006 as *S. dipsacacearum*). *Lomelosia palaestina* (L.) Raf. (*Caprifoliaceae*) (Karaboz and Öner, 1982 as *S. fugax* Penz. & Sacc.). *Pterocephalus papposus* (L.) Coult. (*Caprifoliaceae*) (Amano, 1986 as *S. fuliginea*; Bahçecioğlu et al., 2006 as *S. dipsacacearum*). *Scabiosa persica* Boiss. (Tamer et al., 1992 as *S. fuliginea*).

P. epilobii (Wallr.) de Bary, Abh. Senckenb. Naturforsch. Ges. 1(no. 3): 48 (1870).

Epilobium angustifolium L. (Hüseyin and Selçuk, 2000 as *Sphaerotheca epilobii* (Wallr.) de Bary). *Epilobium colchicum* Albov (Hüseyin and Selçuk, 2000 as *S. epilobii*). *Epilobium hirsutum* L. (Amano, 1986; Hüseyin and Selçuk, 2000 as *S. epilobii*). *Epilobium* sp. (Amano, 1986 as *S. epilobii*).

P. erigerontis-canadensis (Lév.) U. Braun & T.Z. Liu, in Liu, The Erysiphaceae of Inner Mongolia: 198 (2010)

Cichorium intybus L. (*Asteraceae*) (Amano, 1986 as *Sphaerotheca fuliginea*). *Conyza canadensis* (L.) Cronquist (*Asteraceae*) (Karakaya, 1998c; Sert et al., 2006 as *S. fusca* (Fr.) S. Blumer). *Hieracium schmidtii* Tausch subsp. *lasiochaetum* (Bornm. & Zahn) Greuter. (*Asteraceae*) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. fusca*). *Lapsana communis* L. (*Asteraceae*) (Bremer et al., 1947 as *S. fuliginea*; Amano, 1986 as *Oidium* sp.). *Leontodon hispidus* L. (*Asteraceae*) (Kabaktepe and Bahçecioğlu, 2006 as *S. fusca*). *Leontodon* sp. (Oran, 1967; Amano, 1986 as *S. fuliginea*). *Taraxacum androssovii* Schischk. (*Asteraceae*) (Tamer et al., 1997 as *S. fuliginea*). *Taraxacum campyloides* G.E. Haglund (Bremer et al., 1947; Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000; Severoğlu and Özyiğit, 2012 as *S. fusca*). *Taraxacum* sp. (Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kabaktepe and Bahçecioğlu, 2006 as *S. fusca*).

P. erodii (Durieu & Mont.) U. Braun & S. Takam., Schlechtendalia 4: 28 (2000).

Erodium cicutarium (L.) L'Hér. (*Geraniaceae*) (Hüseyin and Selçuk, 2000 as *Sphaerotheca erodii* (Jacq.) Rayss; Uçar and Öner, 1977; Tamer and Öner, 1978 as *S. fugax*; Amano, 1986 as *S. erodii*). *Erodium gruinum* Ten. (Göbelez, 1962; Oran, 1967; Karaboz and Öner, 1982 as *S. fugax*; Amano, 1986 as *S. erodii*). *Erodium malacoides* (L.) L'Hér. (Hüseyin and Selçuk, 2000 as *S. erodii*; Karaboz and Öner, 1982; Hüseyin and Selçuk, 2000 as *S. fugax*). *Erodium moschatum* (Burm.f.) L'Hér. (Oran, 1967; Karaboz and Öner, 1982 as *S. fugax*; Amano, 1986 as *S. erodii*). *Erodium* sp. (Braun, 1987 as *S. erodii*).

P. euphorbiae (Castagne) U. Braun & S. Takam., Schlechtendalia 4: 28 (2000).

Chrozophora tinctoria (L.) A. Juss. (Amano, 1986 as *Sphaerotheca euphorbiae* (Castagne) E.S. Salmon). *Euphorbia falcata* L. (*Euphorbiaceae*) (Amano, 1986; Hüseyin and Selçuk, 2000; Oran, 1967 as *S. euphorbiae*). *Euphorbia helioscopia* L. (Oran, 1967; Tamer and Öner, 1978; Amano, 1986; Hüseyin and Selçuk, 2000 as *S. euphorbiae*). *Euphorbia palustris* L. (Bremer et

al., 1947; Baydar, 1975; Hüseyin and Selçuk, 2000 as *S. euphorbiae*). *Euphorbia macroclada* Boiss. (Bremer et al., 1947; Oran, 1967; Baydar, 1975; Hüseyin and Selçuk, 2000 as *S. euphorbiae*). *Euphorbia* sp. (Amano, 1986 as *Oidium cyparissiae* P. Syd.; Bahçecioğlu and Yıldız, 2005 as *S. euphorbiae*).

P. ferruginea (Schltdl.) U. Braun & S. Takam., Schlechtendalia 4: 28 (2000).

Sanguisorba minor Scop. (Rosaceae) (Karakaya, 1998a; Bahçecioğlu and Yıldız, 2005; Sert et al., 2006).

P. fugax (Penz. & Sacc.) U. Braun & S. Takam., Schlechtendalia 4: 29 (2000).

Geranium dissectum L. (Geraniaceae) (Karaboz and Öner, 1982 as *Sphaerotheca fuliginea*; Hüseyin and Selçuk, 2000 as *S. fugax*). *Geranium molle* L. (Severoğlu and Özyiğit, 2012 as *S. humuli* (DC.) Burrill). *Geranium rotundifolium* L. (Kırbağ and Kürşat, 2011 as *S. fugax*). *Geranium tuberosum* L. (Tamer and Öner, 1978; Amano, 1986 as *S. fugax*).

P. fuliginea (Schltdl.) U. Braun & S. Takam., Schlechtendalia 4: 29 (2000).

Veronica anagalloides Guss. (Plantaginaceae) (Oran, 1967; Amano, 1986; Hüseyin and Selçuk, 2000 as *Sphaerotheca fuliginea*). *Veronica* sp. (Severoğlu and Özyiğit, 2012 as *S. humuli*).

P. fusca (Fr.) U. Braun & Shishkoff, in Braun & Takamatsu, Schlechtendalia 4: 29 (2000).

Doronicum orientale Hoffm. (Asteraceae) (Tamer and Öner, 1978; Amano, 1986; Hüseyin and Selçuk, 2000 as *Sphaerotheca fuliginea*).

P. leucotricha (Ellis & Everh.) E.S. Salmon, Mem. Torrey bot. Club 9: 40 (1900).

Cydonia sp. (Rosaceae) (Severoğlu and Özyiğit, 2012). *Malus floribunda* Siebold ex Van Houtte (Rosaceae) (Oran, 1967; Amano, 1986). *Malus pumila* Mill. (Karel, 1958; Göbelez, 1962; Öner and Ekmekçi, 1974; Amano, 1986). *Malus sylvestris* (L.) Mill. (Karaca, 1961; Oran, 1967; Baydar, 1975; Güven and Tamer, 1993; Kırbağ and Kürşat, 2011). *Malus* sp. (Severoğlu and Özyiğit, 2012). *Pyrus communis* L. (Rosaceae) (Amano, 1986).

P. mors-uvae (Schwein.) U. Braun & S. Takam., Schlechtendalia 4: 30 (2000).

Ribes nigrum L. (Grossulariaceae) (Hüseyin and Selçuk, 2000 as *Sphaerotheca mors-uvae* (Schwein.) Berk. & M.A. Curtis). *Ribes rubrum* L. (Amano, 1986; Hüseyin and Selçuk, 2000 as *S. mors-uvae*). *Ribes uva-crispa* L. (Amano, 1986 as *S. mors-uvae* on *Ribes grossularia* L.; Hüseyin and Selçuk, 2000 as *S. mors-uvae*).

P. pannosa (Wallr.) de Bary, Abh. Senckenb. Naturforsch. Ges. 1 (no. 3): 48 (1870).

Prunus dulcis (Mill.) D.A. Webb (Rosaceae) (Karaca, 1961; Oran, 1967; Amano, 1986 as *Sphaerotheca pannosa* (Wallr.) Lév.; Hüseyin and Selçuk, 2000 as *S. persicae* (Woron.) Erikss.). *Prunus persica* (L.) Batsch (Karaca, 1961; Göbelez, 1962; Öner and Ekmekçi, 1974; Öner et al., 1974; Oran, 1967; Uçar and Öner, 1977; Amano, 1986; Bahçecioğlu and Işıloğlu, 1995; Kırbağ and Kürşat, 2011 as *S. pannosa*; Hüseyin and Selçuk, 2000 as *S. persicae*). *Rosa canina* L. (Rosaceae) (Baydar, 1975; Amano, 1986; Hüseyin and Selçuk, 2000; Kabaktepe and Bahçecioğlu, 2006 as *S. pannosa*). *Rosa damascena* Mill. (Hüseyin and Selçuk, 2000 as *S. pannosa*). *Rosa hemisphaerica* Herm. (Bremer et al., 1947; Amano, 1986 as *S. pannosa*). *Rosa montana* Chaix ex Vill. (Kırbağ and Kürşat, 2011 as *S. pannosa*). *Rosa* sp. (Bremer et al., 1947; Karel, 1958; Karaca, 1961; Göbelez, 1952, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Öner et al., 1974; Amano, 1986; Güven and Tamer, 1993; Severoğlu and Özyiğit, 2012 as *S. pannosa*).

P. phtheirospermi (Henn. & Shirai) U. Braun & T.Z. Liu, in Liu, The Erysiphaceae of Inner Mongolia: 212 (2010)

Euphrasia pectinata Ten. (Orobanchaceae) (Tamer et al., 1997 as *Sphaerotheca fuliginea*). *Bornmuelleranthus aucheri* (Boiss.) Rothm. (Orobanchaceae) (Tamer et al., 1997 as *S. melampyri* L. Junell). *Pedicularis comosa* L. (Orobanchaceae) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. fusca*). *Rhinanthus angustifolius* C.C. Gmel. (Orobanchaceae) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. fusca*).

P. plantaginis (Castagne) U. Braun & S. Takam., Schlechtendalia 4: 31 (2000).

Plantago lanceolata L. (Plantaginaceae) (Oran, 1967; Amano, 1986 as *Sphaerotheca fuliginea*; Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005; Kabaktepe and Bahçecioğlu, 2006; Kırbağ and Kürşat, 2011 as *S. plantaginis* (Castagne) L. Junell; Severoğlu and Özyiğit, 2012). *Plantago major* L. (Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000; Kabaktepe and Bahçecioğlu, 2006 as *S. plantaginis*; Severoğlu and Özyiğit, 2012). *Plantago minor* Gilib. (Severoğlu and Özyiğit, 2012).

P. senecionis U. Braun, Taxonomic Manual of the Erysiphales (Powdery Mildews), CBS Biodiversity Series, 11: 158 (2012).

Senecio leucanthemifolius Poir. subsp. *vernalis* (Waldst. & Kit.) Greuter (Asteraceae) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *Sphaerotheca fusca*).

P. thalictri (L. Junell) U. Braun & S. Takam., Schlechtendalia 4: 31 (2000).

Thalictrum aquilegifolium L. (Ranunculaceae) (Hüseyin and Selçuk, 2000 as *Sphaerotheca thalictri* L. Junell). *Thalictrum minus* L. (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. thalictri*). *Thalictrum simplex* L. (Hüseyin and Selçuk, 2000 as *S. thalictri*).

P. tridactyla (Wallr.) de Bary, Abh. Senckenb. Naturforsch. Ges. 7: 408 (1870).

Prunus armeniaca L. (Rosaceae) (Karel, 1958; Karaca, 1961; Göbelez, 1962; Oran, 1967; Öner and Ekmekçi, 1974; Amano, 1986). *Prunus avium* Mill. (Rosaceae) (Amano, 1986). *Prunus cerasus* L. (Oran, 1967; Öner and Ekmekçi, 1974; Amano, 1986). *Prunus incana* (Pall.) Batsch (Bahçecioğlu and Yıldız, 2005). *Prunus mahaleb* L. (Amano, 1986). *Prunus* sp. (Bahçecioğlu et al., 2006).

Notes: In Georgia, one of the mentioned host species, viz. *Prunus incana*, can be infected by *Podosphaera salatai* V.P. Heluta, U. Braun & Gvrit. (Heluta et al., 2005; Braun and Cook, 2012). Thus, the identity of this Turkish collection is still unclear.

P. xanthii (Castagne) U. Braun & Shishkoff, in Braun & Takamatsu, Schlechtendalia 4: 31 (2000)

Arctium lappa L. (Asteraceae) (Oran, 1967; Amano, 1986; Hüseyin and Selçuk, 2000 as *Sphaerotheca fuliginea*). *Bidens tripartita* L. (Asteraceae) (Hüseyin and Selçuk, 2000; Bahçecioğlu and Yıldız, 2005 as *S. fusca*). *Calendula officinalis* L. (Asteraceae) (Göbelez, 1962; Oran, 1967; Amano, 1986 as *S. fuliginea*; Kavak, 2011). *Citrullus lanatus* (Thunb.) Matsum. & Nakai (Cucurbitaceae) (Hüseyin and Selçuk, 2000 as *S. cucurbitae* (Jacq.) Z.Y. Zhao). *Cosmos* sp. (Asteraceae) (Karakaya, 1998c as *S. fusca*). *Cucumis melo* (Cucurbitaceae) (Bremer et al., 1947; Karel, 1958; Göbelez, 1962; Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000 as *S. cucurbitae*; Kırbağ and Turan, 2005 as *S. fuliginea*). *Cucumis sativus* L. (Karel, 1958; Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000 as *S. cucurbitae*; Kırbağ and Turan, 2005; Kırbağ and Kürşat, 2011 as *S. fuliginea*). *Cucurbita pepo* L. (Cucurbitaceae) (Bremer et al., 1947; Karel, 1958; Göbelez, 1962; Oran, 1967; Amano, 1986 as *S. fuliginea*; Hüseyin and Selçuk, 2000 as *S. cucurbitae*; Kırbağ and Kürşat, 2011 as *S. fuliginea*). *Lagenaria siceraria* (Molina) Standl. (Cucurbitaceae) (Bremer et al., 1947; Oran, 1967; Amano, 1986 as *S. fuliginea*). *Physalis alkekengi* L. (Solanaceae) (Oran, 1967;

Amano, 1986 as *S. fuliginea*). *Vigna unguiculata* (L.) Walp. (*Fabaceae*) (Soylu et al., 2004 as *Podosphaera phaseoli* (Z.Y. Zhao) U. Braun & S. Takam.). *Xanthium spinosum* L. (*Asteraceae*) (Bremer et al., 1947; Oran, 1967; Amano, 1986 as *S. fuliginea*; Kabaktepe and Bahçecioğlu, 2006 as *S. fusca*). *Xanthium strumarium* L. (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Uçar and Öner, 1977; Amano, 1986; Hüseyin and Selçuk, 2000 as *S. fuliginea*; Bahçecioğlu and Yıldız, 2005; Bahçecioğlu et al., 2006; Kırbağ and Kürşat, 2011 as *S. fusca*). *Zinnia elegans* Jacq. (*Asteraceae*) (Kavak, 2011).

Podosphaera sp.

Viola sp. (*Violaceae*) (Severoğlu and Özyiğit, 2012 as *Sphaerotheca macularis*).

Notes: *S. macularis* (current name *Podosphaera macularis* (Wallr.) U. Braun & S. Takam.) is confined only to the hosts belonging to *Humulus* L. (*Cannabaceae*). Braun and Cook (2012) mentioned on *Viola P. violae* (U. Braun) U. Braun & S. Takam. but this species is known only from North America. Nevertheless, some *Podosphaera* species can infect *Viola* in Europe and Asia. For example, Voytyuk et al. (2008) illustrated a powdery mildew on *V. canadensis* (cult.) conidia of which had fibrosin bodies. Therefore, the identity of these collections is still unclear and we prefer to interpret this fungus as *Podosphaera* sp.

Sawadaea Miyabe

S. bicornis (Wallr.) Homma, J. Coll. agric., Hokkaido imp. univ. 38: 371 (1937).

Acer campestre L. (Amano, 1986). *Acer negundo* L. (Oran, 1967; Amano, 1986; Severoğlu and Özyiğit, 2012 as *Uncinula aceris* (DC.) Sacc.). *Acer pseudoplatanus* L. (Oran, 1967 as *U. aceris*; Amano, 1986; Severoğlu and Özyiğit, 2012 as *Erysiphe platani* (Howe) U. Braun & S. Takam.).

Anamorphic species

Euoidium Y.S. Paul & J.N. Kapoor

E. lycopersici (Cooke & Massee) U. Braun & R.T.A. Cook, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 335 (2012).

Lycopersicon esculentum Mill. (*Solanaceae*) (Amano, 1986 as *Erysiphe communis*; Severoğlu and Özyiğit, 2012 as *Oidium lycopersici* Cooke & Massee).

Fibroidium (R.T.A. Cook, A.J. Inman & C. Billings) R.T.A. Cook & U. Braun

F. abelmoschi (Thüm.) U. Braun & R.T.A. Cook, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 167 (2012).

Abelmoschus esculentus (L.) Moench (Amano, 1986; Braun, 1995 as *Oidium abelmoschi* Thüm.).

Oidiopsis Scalia, Agric. Calabro-Siculo 27: 396 (1902)

O. andrachnes Golovin ex U. Braun, Taxonomic Manual of the *Erysiphales* (Powdery Mildews), CBS Biodiversity Series, 11: 211 (2012).

Andrachne telephioides L. (*Phyllanthaceae*) (Bremer et al., 1947; Karaca, 1961; Oran, 1967; Amano, 1986; Tamer et al., 1992; Bahçecioğlu and Işiloğlu, 1995; Bahçecioğlu and Yıldız, 2001, 2005; Bahçecioğlu et al., 2006 as *Leveillula taurica*; Braun and Cook, 2012).

O. balsaminae Rajd., Mycopath. Mycol. appl. 28: 150 (1966)

Impatiens balsamina L. (*Balsaminaceae*) (Amano, 1986 as *Leveillula taurica*; Braun and Cook, 2012).

O. cisti (Jaap) Golovin, Acta Inst. bot. Komarov. Acad. Sci., Pl. Crypt. ser. 2 10: 298 (1956)

Cistus creticus L. (*Cistaceae*) (Öner et al., 1974; Amano, 1986 as *Leveillula taurica*; Braun and Cook, 2012).

Pseudoidium Y.S. Paul & J.N. Kapoor

P. ceratoniae (Comes) U. Braun & R.T.A. Cook, CBS Biodiversity Series, 11: 601 (2012).

Ceratonia siliqua L. (*Fabaceae*) (Hüseyin et al., 2009 as *Oidium ceratoniae* Comes).

P. hortensiae (Jørst.) U. Braun & R.T.A. Cook, CBS Biodiversity Series, 11: 606 (2012).

Hydrangea macrophylla (Thunb.) Ser. (*Hydrangeaceae*) (Braun, 1995 as *Oidium hortensiae* Jørst.).

P. lauracearum (Graniti & U. Braun) U. Braun & R.T.A. Cook, CBS Biodiversity Series, 11: 609 (2012).

Laurus nobilis L. (*Lauraceae*) (Severoğlu and Özyiğit, 2012 as *Oidium lauracearum* Graniti & U. Braun).

Excluded and doubtful species of powdery mildews and their hosts

Erysiphe cichoracearum DC.

Ranunculus asiaticus L. (*Ranunculaceae*) (Amano, 1986).

Notes: This species (current name *Golovinomyces cichoracearum*) infects the *Asteraceae*. Plants belonging to *Ranunculus* are common hosts of *Erysiphe aquilegiae*. The identity of this collection is still unclear.

Erysiphe communis (Wallr.) Schldtl.

Chrozophora tinctoria (L.) A. Juss. (*Euphorbiaceae*) (Bremer et al., 1947; Oran, 1967; Amano, 1986). *Hydrangea macrophylla* (Thunb.) Ser. (*Hydrangeaceae*) (Amano, 1986). *Mentha* sp. (*Lamiaceae*) (Amano, 1986).

Notes: No species belonging to *Erysiphe* sect. *Erysiphe* are known on *Chrozophora*. *Hydrangea* representatives can be infected by *E. poeltii* U. Braun but this fungus is only North American powdery mildew. *Erysiphe hommae* U. Braun is known on *Mentha* only from Eastern Asia. Therefore, records of *E. poeltii* and *E. hommae* in Turkey are unlikely. Thus, the identity of these collections is still unclear.

Erysiphe geraniacearum U. Braun & Simonyan

Geranium pratense L. (*Geraniaceae*) (Braun, 1995).

Notes: This species is mentioned for the European part of Turkey in one of the monographs by U. Braun (1995), but in the more capital works (Braun, 1987; Braun and Cook, 2012) *E. geraniacearum* for the country is not given.

E. lagerstroemiae E. West

Lagerstroemia indica L. (*Lythraceae*) (Severoğlu and Özyiğit, 2012).

Notes: Status of this species was discussed by Braun and Cook (2012). As result *E. lagerstroemiae* is excluded from the world list of powdery mildews. Perhaps only *E. australiana* infected *L. indica* in Turkey.

E. polygoni DC.

Alnus glutinosa (L.) Gaertn. (*Betulaceae*) (Severoğlu and Özyiğit, 2012). *Hydrangea* sp. (Severoğlu and Özyiğit, 2012). *Calendula* sp. (*Asteraceae*) (Severoğlu and Özyiğit, 2012). *Liriodendron tulipifera* L. (*Magnoliaceae*) (Severoğlu and Özyiğit, 2012). *Mentha spicata* L. (*Lamiaceae*) (Tamer et al., 1990b). *Mentha* sp. (Öner and Ekmekçi, 1974).

Notes: This species parasitises only hosts belonging to *Polygonaceae*. The identity of these collections is still unclear.

E. trinae Harkn.

Quercus hartwissiana Steven (*Fagaceae*) (Severoğlu and Özyiğit, 2012).

Notes: This unusual species is known only from North America, USA (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely.

Microsphaera abbreviata Peck

Quercus sp. (Bahçecioglu et al., 2006).

Notes: This species (current name *Erysiphe abbreviata* (Peck) U. Braun & S. Takam.) is known only from North America, USA (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely.

M. alni (Wallr.) G. Winter

Catalpa bignonioides Walter (*Bignoniaceae*) (Severoğlu and Özyiğit, 2012). *Cornus* sp. (*Cornaceae*) (Severoğlu and Özyiğit, 2012). *Corylus avellana* L. (*Betulaceae*) (Severoğlu and Özyiğit, 2012). *Gleditsia triacanthos* L. (*Fabaceae*) (Severoğlu and Özyiğit, 2012). *Quercus* sp. (*Fagaceae*) (Severoğlu and Özyiğit, 2012). *Spiraea* sp. (*Rosaceae*) (Severoğlu and Özyiğit, 2012). *Tilia platyphyllos* Scop. (*Malvaceae*) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Erysiphe penicillata* (Wallr.) Schltdl.) is confined only to the hosts belonging to *Alnus* (*Betulaceae*) (Braun and Cook, 2012). All of the plants listed here excluding *Spiraea*, can be infected by representatives of *Erysiphe* sect. *Microsphaera*. However, these powdery mildews are known in East Asia or North America, but not in Central or Western Asia. Therefore, to determine the taxonomic affiliation for mentioned records is not given possible. Perhaps, in all cases hasmothecia of powdery mildews were brought on these plants from other substrates. The identity of these collections is still unclear.

M. diffusa Cooke & Peck

Robinia pseudoacacia L. (*Fabaceae*) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Erysiphe diffusa* (Cooke & Peck) U. Braun & S. Takam.) is the North American fungus, its finds on *Robinia* in Asia are questionable (Braun and Cook, 2012). In Europe and Asia this host plant can be infected by *Erysiphe palczewskii* (Jacz.) U. Braun & S. Takam., *E. pseudoacaciae* (P.D. Marczenko) U. Braun & S. Takam., and *E. robiniae* Grev. (Braun and Cook, 2012). Obviously, the record belongs to one of these species.

Oidium spp.

Adonis vernalis L. (*Ranunculaceae*) (Amano, 1986). *Bellis perennis* L. (*Asteraceae*) (Amano, 1986). *Calamintha* sp. (*Lamiaceae*) (Amano, 1986). *Morina persica* L. (*Caprifoliaceae*) (Amano, 1986). *Malva* sp. (*Malvaceae*) (Amano, 1986). *Phyla nodiflora* (L.) Greene (*Verbenaceae*) (Amano, 1986 as *Oidium lippiae* Thüm.). *Primula* sp. (*Primulaceae*) (Amano, 1986). *Muscari* sp. (*Hyacinthaceae*) (Amano, 1986). *Sesamum indicum* L. (*Pedaliaceae*) (Amano, 1986).

Notes: The identity of these collections is still unclear. Powdery mildew on *Malva* belongs probably to *Erysiphe malvae* V.P. Heluta.

Phyllactinia corylea (Pers.) P. Karst.

Liriodendron tulipifera L. (*Magnoliaceae*) (Severoğlu and Özyiğit, 2012).

Notes: This species is a synonym to *Phyllactinia guttata* which parasitises hosts belonging to *Corylus*. *Liriodendron* species are infected by *P. liriodendri* U. Braun but only in North America (Braun and Cook, 2012). The identity of this collection is still unclear.

P. guttata (Wallr.) Lévl.

Actinidia deliciosa (A. Chev.) C.F. Liang & A.R. Ferguson (*Actinidiaceae*) (Erper et al., 2012).

Notes: Three *Phyllactinia* species are known on *Actinidia* (Braun and Cook, 2012). All of them are distributed only in East Asia. Thus, the record of this fungus in Turkey is unlikely. Perhaps, hasmothecia were brought on this plant from other substrate.

P. paulowniae Y.N. Yu & S.J. Han, in Yu & Lai

Paulownia sp. (*Paulowniaceae*) (Severoğlu and Özyiğit, 2012).

Notes: Two powdery mildews can infect hosts belonging to *Paulownia*. One of them, *Phyllactinia paulowniae*, was described from China and is known only from the type collection. Other species, *P. salmonii* S. Blumer, also is known only from East Asia (China, Japan, and Korea). Thus, the record of this fungus in Turkey is unlikely. Perhaps, hasmothecia were brought on this plant from other substrate.

P. suffulta (Rebent.) Sacc.

Buxus sp. (*Buxaceae*) (Amano, 1986). *Juglans* sp. (*Juglandaceae*) (Amano, 1986). *Rhamnus* sp. (*Rhamnaceae*) (Amano, 1986). *Rubus vulgaris* Weihe & Nees (*Rosaceae*) (Oran, 1967; Amano, 1986).

Notes: The identity of these collections is still unclear. Perhaps, hasmothecia were brought on these plants from other substrates.

Podosphaera oxyacanthae (DC.) de Bary

Spiraea × *vanhouttei* (Briot) Carrière (Severoğlu and Özyiğit, 2012).

Notes: In Europe, hosts belonging to *Spiraea* often are infected by a powdery mildew fungus only in anamorphic state. Obviously, the same fungus found in Turkey. The identity of such collections is still unclear (Braun and Cook, 2012).

Sphaerotheca humuli (DC.) Burriel

Ranunculus constantinopolitanus (DC.) d'Urv. (*Ranunculaceae*) (Severoğlu and Özyiğit, 2012). *Sambucus ebulus* L. (*Caprifoliaceae*) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Podosphaera macularis* (Wallr.) U. Braun & S. Takam.) is confined only to the hosts belonging to *Humulus* L. (*Cannabaceae*). In addition, no species of the genus *Podosphaera* were mentioned on *Ranunculus* and *Sambucus* in the monograph by Braun and Cook (2012). Therefore, the identity of these collections is still unclear.

Uncinula circinata Cooke & Peck

Acer negundo L. (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Takamatsuella circinata* (Cooke & Peck) U. Braun & A. Shi) is known only from North America, USA (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely.

U. clintonii Peck

Tilia platyphyllos Scop. (Malvaceae) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Erysiphe clintonii* (Peck) U. Braun & S. Takam.) is known only from North America (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely.

U. geniculata W.R. Gerard

Morus alba L. (Moraceae) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Erysiphe geniculata* (W.R. Gerard) U. Braun & S. Takam.) is known only from North America (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely.

U. parvula Cooke & Peck

Celtis australis L. (Cannabaceae) (Severoğlu and Özyiğit, 2012).

Notes: This species (current name *Erysiphe parvula* (Cooke & Peck) U. Braun & S. Takam.) is known only from North America (Farr et al., 1989; Braun and Cook, 2012). It was not found in any regions of Asia or Europe. Therefore, records of this fungus in Turkey are unlikely. We assume that this record corresponds to other fungus, *E. celtidis* (Schwarzman & Kusnezowa) U. Braun & S. Takam., which is found on *C. australis* in neighboring countries.

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