Mycopath (2018) 16(1): 23-31 **Research Article**

Taxonomic investigation of myxomycetes in Altınözü, Turkey

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Abstract

This study was carried out in Altınözü district of Turkey during 2011-2012 years. 44 stations were determined from the area. Samples were collected from these stations. The samples were collected from barks of trees, leaves and the materials of decaying trees. Using these materials, myxomycetes sporophores were developed in humid chamber culture. In addition myxomycetes which grew up in their natural environments were obtained. As a result of field and laboratory studies, 74 taxa belonging to 11 families and 23 genera were identified, and they were added to the Turkish Myxobiota.
Keyword: Altınözü-Hatay, Biodiversity, Myxomycetes, Taxonomy.

Introduction

Myxomycetes, known as real slime fungi or plasmodial slime fungi, are multi-nucleated, non-celled creatures that can produce one or more types of spores. According to the new classification system, fungi-like organisms examined in Mycetozoa (fungi-animals) in Protista and are quite common in terrestrial ecosystems (Farr, 1981).

Myxomycetes are sensitive to light, moisture and temperature as well as the property of the substrate on which they develop. Mycetozoa can be found as abundant in cool, humid and shaded environments such as decayed logs, branches, live or dead tree shells, rotted fruits or fruit scraps, dead leaves and leaf rashes, as well as some organic substances, herbivore animal feces, rock and animal skull. It lives in these habitats with other microorganisms (bacteria, yeasts, fungus hyphae, blue-green bacteria and green algae) (Farr, 1981).

Nowadays, thanks to the developing molecular applications and genetic analysis, it is more appropriate to examine the Miksomiset in the Protista world rather than the fungi. Although spore-forming structures, which are the last stage of their life cycle, resemble some of the spore-forming structures of high-fungi, all other stages show a great similarity with the life of typical amoebic or whip organisms. According to this system, Miksomisetler is the only class belonging to Protista's Myxomycota divisios. The Myxomycetes class is divided into three subclasses, Ceratiomyxomycetidae, Myxogastromycetidae and Stemonitomycetidae and six subgroups, Ceratiomyxales, Liceales, Echinosteliales, Trichiales, Physarales and Stemonitales (Alexopoulos *et al.,* 1996).

The number of Myxomycete identified is 1017 in the world. (Lado, 2018). This number is still 285 in Turkey (Sesli *et al.*, 2016; Baba and Er, 2018). Turkey is in a temperate climate and a relatively rich floristic diversity because it has myxomycete number is expected to be higher. Although there has been an increase in the number of studies on myxomycetes after 2000 in Turkey, it is still not completed.

This study was aimed to determine the myxomycetes species in different localities within the boundaries of Altınözü (Hatay), Turkey.

Materials and Methods

Research area

Altınözü district covers an area of 325 km^2 in the southern part of Hatay, Turkey. There are Antakya in the north, Yayladağı in the west, and Syria in the south and east. The total area of the district is 357 decares. The average annual temperature in Altınözü is 16.7 °C. The average annual relative humidity is 62% in Altınözü. Relative humidity (74%), which is higher in winter, decreases in summer (55%). The average annual total precipitation is 797.4 mm in Altınözü. *Pinus brutia* L. is the main forest area in the study area. In addition, in the work area and in the vicinity of the unspoiled areas, shrub vegetation is found. The main types of shrubare species such as Kermez oak (*Quercus coccifera* L.), laurel (*Laurus nobilis* L.), oleander (*Nerium oleander* L.), wild olives (*Olea europea* L.), carob (*Ceratonia siliqua* L.), sumac (*Rhus coriaria* L.), pistacia (*Pistacia terebinthus* L.), rosary tree (*Styrax officinalis* L.), gorse (*Spartium junceum* L.) and myrtle (*Myrtus comminus* L.) (Anonymous, 2012).

Samplings and identifications

In the field studies, natural samples of

myxomycetes collected from different regions in Belen district were brought to the laboratory environment in small carton boxes by separating them from the environment where they were found with a cutting tool.

Materials not containing myxomycetes and sporophor samples but containing myxomycet spores (tree bark, cut tree stumps, rash and decaying leaves, pointer, cones, fruit and residues of vegetable materials) were placed in small lock storage bags and moved to the laboratory environment. Then, in the laboratory, it was ensured that they were able to form the fructification with the moist chamber technique developed by Gilbert and Martin (1933).

When using the moist chamber technique, a double layer of sterile filter paper was placed on the Petri dishes or transparent storage containers. Samples were then placed on the samples and distilled water was added, and the samples were expected to swell for 24-48 h. It has been tried to obtain sporophores by making observations in stereomicroscope at certain intervals by keeping them in diffuse light. The obtained samples were prepared by laying one or two layers of blotting paper in the Petri dishes with storage containers and drying at room temperature. After drying process, it was turned into fungaryum material.

The general structure, shape, color, macroscopic measurements, capillitium, presence of pseudocapillitium and columella, if any, shape and measurements, shape, color, size and ornamentations of spore were investigated in detail. Specimens were identified by using source books (Farr, 1981; Martin *et al.,* 1983; Stephenson and Stempen, 1994; Neubert *et al.,* 2000; Sesli *et al.,* 2016). The fungarium materials of the identified samples were stored in the laboratory of the Department of Biology of Mustafa Kemal University.

Results and Discussion

Between 2011 and 2012, 612 samples were collected from 41 different stations in Altınözü district and processed in the laboratory. A total of 342 myxomycet samples were obtained. As a result of the diagnosis of myxomycet samples obtained from both natural environment and humid chamber culture, 74 taxa were obtained in 23 genera belonging to 11 families. Six species (10 samples) were obtained only from the natural environment, 47 species (147 samples) were obtained only from humid chamber culture, and 21 species (185 samples) were obtained from both natural environment and humid chamber culture. During the application of humidity chamber technique, the pH of the water was measured before the sample water was evacuated and it was determined that the pH values of the samples that generally developed fluctuation were close to neutral. This situation is similar to the results of Härkönen and Uotila (1983).

In the obtained species *Echinostelium minutum, Arcyria cinerea, Comatricha ellae, C. nigra* and *Didymium anellus* were mostly determined in all stations. *E. minutum* was obtained only with moisture chamber technique. *A. cinerea, D. difforme* and *C. nigra* were obtained both naturally and with moisture chamber technique. These species have been reported to be very common (Ergül *et al.,* 2005a, Baba and Arslan, 2017).

When the distribution of myxomycetes was examined, it has been reported that *E. minutum, A. cinerea, A. denudata, D. difforme* and *Stemonitis fusca* can develop widely in all parts of the world and on all kinds of substrates (Stephenson and Stempen, 1994). In addition, the majority of these studies have been widely detected in Turkey (Ergül *et al.,* 2005b; Ocak and Hasenekoğlu, 2005).

Genera determined in our research area were *Ceratiomyxa* 1, *Clastoderma* 1, *Echinostelium* 1, *Cribraria* 5, *Dictydiaethalium* 1, *Licea* 5, *Lycogala* 1, *Arcyria* 7, *Perichaena* 3, *Oligonema* 1, *Hemitrichia* 2, *Trichia* 4, *Diderma* 1, *Didymium* 7, *Badhamia* 4, *Physarum* 13, *Collaria* 1, *Comatricha* 3, *Enerthenema* 1, *Lamproderma* 2, *Macbrideola* 2, *Stemonitis* 4, and *Stemonitopsis* 4 species.

Fifty five taxa were determined in 4 families (Stemonitaceae, Physaraceae, Arcyriaceae, and Didymiaceae) in Altınözü. These taxa constitute 71.4% of the samples in our research area. This rate is similar (72.4%) to the work by Baba (2008).

The taxa determined by the field studies are listed in alphabetical order. The habitat, settlement, geographical location, sample numbers of the samples are indicated.

Systematic classification

Eukaryota
Protozoa
Amoebozoa
Myxomycetes

Ceratiomyxales
Ceratiomyxidae

1. *Ceratiomyxa fruticulosa* (O.F. Müll.) T. Macbr.; Hanne mountain, on *Pinus* sp. Wood, Natural, Gelen. 152; Seferli, on *Pinus* sp. wood, Baba. 85.

Echinosteliales
Clastodermataceae

2. *Clastoderma debaryanum* Blytt; Erbaşı, on *Quercus* sp. wood, Gelen. 582.

Echinosteliaceae

3. *Echinostelium minutum* de Bary; Akdarı, on *Quercus* sp. wood, Gelen. 41; Kule, on *Pinus* sp. wood, Baba. 243; Yanıkpınar, on *Pinus* sp. rash, Gelen. 348; Dokuzdal, on *Pinus* sp. wood, Gelen. 326; Yiğityolu, on *Cupressus* sp. bark, Gelen. 114; Yarseli, on *Cupressus* sp. bark, Gelen. 385; Ziyaret, on *Cupressus* sp. bark, Gelen. 492; Kılıçtutan, on *Quercus* sp. wood, Baba. 609; Karsu, on *Cupressus*

sp. bark, Gelen. 409; Yolağzı, on *Pinus* sp. wood, Gelen. 483; Erbaşı, on *Pinus* sp. wood, Gelen. 592; Yunushan, on *Pinus* sp. wood, Gelen. 567; Kozkalesi, on *Pinus* sp. wood, Gelen. 35; Akamber, on *Quercus* sp. bark, Gelen. 509; Çetenli, on *Pinus* sp. wood, Gelen. 194; Seferli, on rotten rash, Gelen. 97; Mayadalı, on *Cupressus* sp. wood, Baba. 278.

Liceales
Cribrariaceae
4. *Cribraria argillacea* (Pers.) Pers. Kozkalesi; on *Pinus* sp. wood, Gelen. 37.

5. *C. cancellata* (A.Lister) Nann.- Bremek; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 68; Hanne mountain, on *Pinus* sp. wood, Gelen. 161; on *Cupressus* sp. wood, Baba. 192; Kule, on *Pinus* sp. wood, Gelen. 269; Seferli, on *Pinus* sp. wood, Gelen. 97; Yiğityolu, on *Cupressus* sp. wood, Gelen. 112.

6. *C. elegans* Berk. & M.A. Curtis; Akdarı, on *Quercus* sp. wood, Baba. 47; Yunushan, on *Pinus* sp. wood, Gelen 564.

7. *C. microcarpa* (Schrader) Person; Erbaşı, on *Pinus* sp. wood, Gelen. 590.

8. *C. violacea* Rex.; Hanne Dağı, on *Pinus* sp. wood, Gelen. 160; Sarıbük, on *Quercus* sp. wood, Baba. 284; Kule, on *Pinus* sp. wood, Gelen. 247; Yunushan, on *Pinus* sp. wood, Gelen. 555; Kozkalesi, on *Pinus* sp. wood, Gelen. 36; Avuttepe, on *Pinus* sp. wood, 580; Kılıçtutan, on *Quercus* sp. wood, Baba. 607.

Dictydiaethaliaceae
9. *Dictydiaethalium plumbeum* (Schum.) Rost; Altınkaya, on *Pinus* sp. wood, Gelen. 178; Boynuyoğun, on *Cupressus* sp. bark, Gelen. 233; Karsu, on *Cupressus* sp. wood, Baba. 399; Çetenli, on *Cupressus* sp. wood, Gelen. 193; Kıyıgören, on *Cirsium* sp. wood, Gelen. 458; Mayadalı, on *Cupressus* sp. wood, Baba. 278; Yanıkpınar, on *Pinus* sp. wood, Gelen. 357.

Liceaceae
10. *Licea biforis* Morgan; Çetenli, on *Cupressus* sp. bark, Gelen. 191.

11. *L. castanea* G. Lister; Akdarı, on *Quercus* sp. rotten wood, Natural, Gelen. 70; Karsu, on *Cupressus* sp. bark, Gelen. 412.

12. *L. kleistobolus* G.W. Martin; Boynuyoğun, on *Cupressus* sp. wood, Gelen. 235.

13. *L. minima* Fr.; Akdarı, on *Quercus* sp. rotten wood, Gelen. 45; Erbaşı, on *Quercus* sp. rotten wood, Baba. 500.

14. *L. pedicellata* H.C.Gilbert; Çetenli, on *Pinus* sp. bark, Gelen. 199; Karsu, on *Cupressus* sp. bark, Gelen. 411.

Reticulariaceae
15. *Lycogala epidendrum* (L.) Fries; Kozkalesi, on *Pinus* sp. interrupted wood, Natural, Baba. 1.

Trichiales
Arcyriaceae
16. *Arcyria cinerea* (Bull.) Pers.; Tepehan, on *Quercus* sp. bark, Gelen. 542; Yanıkpınar, on *Pinus* sp. wood, Gelen. 356; Kozkalesi, on *Pinus* sp. wood, Gelen. 353; Hanne mountain, on *Pinus* sp. wood, Gelen. 154; Akdarı, on *Quercus* sp. wood, Gelen. 48; Kazancık, on *Pinus* sp. wood, Gelen. 534; Kule, on *Pinus* sp. wood, Baba. 251; Sarıbük, on *Quercus* sp. bark, Gelen. 291; Yanıkpınar, on *Pinus* sp. wood, Gelen. 361; Kılıçtutan, on *Quercus* sp. wood, Baba. 597; Erbaşı, on *Pinus* sp. wood, Gelen. 591; Yunushan, on *Pinus* sp. wood, Gelen. 554; Avuttepe, on *Pinus* sp. wood, Gelen. 574; Kuseyr Stream, on *Populus* sp. wood, Gelen. 148; Akamber, on *Quercus* sp. wood, Gelen. 507; Çetenli, on *Cupressus* sp. bark, Gelen. 196; Mayadalı, on *Cupressus* sp. wood, Baba. 273; Babatorun, on *Cupressus* sp. wood, Gelen. 435.

17. *A. denudata* (L.) Wettst; Büyükburç, on *Pinus* sp. wood, Gelen. 389; Akdarı, on *Quercus* sp. wood, Baba. 55; Hanne mountain, on *Pinus* sp. wood, Gelen. 163; Kılıçtutan, on *Quercus* sp. wood, Gelen. 600; Sarıbük, on *Quercus* sp. wood, Gelen. 287; Mayadalı, on *Cupressus* sp. wood, Gelen. 280.

18. *A. globosa* Schwein; Kule, on *Pinus* sp. wood, Gelen. 261; Erbaşı, on *Quercus* sp. wood, Gelen. 591.

19. *A. incarnata* (Pers. ex J.F. Gmel.) Pers.; Boynuyoğun, on *Cupressus* sp. wood, Gelen. 228; Karsu, on *Quercus* sp. wood, Gelen. 402; Kılıçtutan, on *Quercus* sp. wood, Gelen. 607; Hanne mountain, on *Pinus* sp. wood, Gelen. 157; Sarıbük, on *Quercus* sp. wood, Gelen. 297; Alakent, on *Cupressus* sp. wood, Gelen. 169; Akamber, on *Quercus* sp. wood, Gelen. 510; Oymaklı, on *Cupressus* sp. wood, Gelen. 466.

20. *A. minuta* Buchet; Akdarı, on *Quercus* sp. wood, Gelen. 68; Seferli, on *Pinus* sp. wood, Gelen. 98; Sarıbük, on *Quercus* sp. wood, Gelen. 301.

21. *A. obvelata* (Oeder) Onsberg; Seferli, on *Pinus* sp. bark, Gelen 81, Natural; Kozkalesi, on *Pinus* sp. wood, Gelen. 3; Erbaşı, on *Pinus* sp. wood, Gelen. 586; Yiğityolu, on *Cupressus* sp. bark, Gelen. 111; Dokuzdal, on *Pinus* sp. wood, Gelen. 341; Sarıbük, on *Quercus* sp. wood, Gelen. 304; Hanne mountain, on *Pinus* sp. wood, Gelen. 32.

22. *A. pomiformis* (Leers) Rostaf.; Kılıçtutan, on *Quercus* sp. wood, Gelen. 609; Erbaşı, on *Pinus* sp. wood, Gelen. 587; Sarıbük, on *Quercus* sp. wood, Gelen. 303; Kule, on *Pinus* sp. wood, Gelen. 264; Kozkalesi, on *Pinus* sp. wood, Gelen. 34; Yunushan, on *Pinus* sp. wood, Baba. 562; Kazancık, on *Pinus* sp. wood, Gelen. 543; Akdarı, on *Quercus* sp. wood, Gelen. 58.

23. *Perichaena corticalis* (Batsch) Rost.; Alakent, on *Cupressus* sp. bark, Gelen. 169; Enek, on *Cupressus* sp. wood, Gelen. 521; Kuyubaşı, on *Pinus* sp. wood, Gelen 79; Yunushan, on *Pinus* sp. wood, Gelen. 564; Boynuyoğun, on *Cupressus* sp. bark, Baba. 238; Yarseli, on *Cupressus* sp. bark, Gelen. 377. Boynuyoğun, on *Cupressus* sp. wood, Gelen. 217.

24. *P. depressa* Lib.; Erbaşı, on *Pinus* sp. wood, Gelen. 589; Atayurdu, on rotten rash, Gelen. 187; Çetenli, on *Cupressus* sp. wood, Gelen. 194; Dokuzdal, on *Pinus* sp. wood, Gelen. 345; Büyükburç, on *Cupressus* sp. wood, Gelen. 385; Alakent, on *Cupressus* sp. wood, Gelen. 172; Ziyaret, on rotten rash, Gelen. 491.

25. *P. vermicularis* (Schw.) Rost.; Yanıkpınar, on *Pinus* sp. wood, Natural, Gelen. 359; Ziyaret, on rotten rash, Gelen. 492; Yunushan, on *Pinus* sp. wood, Gelen. 567; Akdarı, on *Quercus* sp. bark, Natural, Gelen. 54; Kansu, on rotten rash, Gelen. 239; Kıyıgören, on *Cirsium* sp. wood, Gelen. 458.

Trichiaceae

26. *Oligonema schweinitzii* (Berk.) G.W. Martin; Yunushan, on *Pinus* sp. wood, Baba. 568.

27. *Hemitrichia clavata* (Pers.) Rostaf.; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 70.

28. *H. pardina* (Minakata) Ing.; Enek, on *Myrtus* sp. wood, Natural, Gelen. 513; Ziyaret, on *Cupressus* sp. bark, Gelen. 487.

29. *Trichia decipiens* (Pers.) T. Macbr.; Kılıçtutan, on *Quercus* sp. wood, Natural, Gelen. 595; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 44.

30. *T. munda* (Lister) Meyl.; Kozkalesi, on *Pinus* sp. wood, Baba. 39.

31. *T. varia* (Pers.) Pers.; Yiğityolu, on rotten rash, Gelen. 101; Hanne mountain, on *Pinus* sp. wood, Baba. 158.

32. *T. verrucosa* Berk.; Kılıçtutan, on *Quercus* sp. wood, Gelen. 608; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 69-70.

Physarales

Didymiaceae

33. *Diderma hemisphaericum* (Bull.) Hormen.; Kurtmezrası, on rotten rash, Natural, Gelen. 413; Oymaklı, on window, Gelen. 466.

34. *Didymium anellus* Morgan; Karsu, on *Cupressus* sp. wood, Gelen. 410; Yarseli, on *Cirsium* sp. wood, Baba. 370.

35. *D. bahiense* Gottsb.; Alakent, on *Cupressus* sp. wood, Baba. 174.

36. *D. difforme* (Pers.) S.F.Gray; Çetenli, on *Cupressus* sp. bark, Gelen. 194; Büyükburç, on *Cirsium* sp. wood, Gelen. 289; Alakent, on *Cirsium* sp. wood, Baba. 169; Atayurdu, on *Cirsium* sp. wood, Gelen. 187; Kurt Mezrası, on *Cirsium* sp. wood, Natural, Gelen. 419; Yarseli, on *Cirsium* sp. wood, Natural, Baba. 368-370; Toprakhisar, on *Cirsium* sp. wood, Natural, Gelen. 427; Yanıkpınar, on *Cirsium* sp. wood, Natural, Gelen. 352; Kansu, on *Cirsium* sp. wood, Gelen. 252; Ziyaret, on *Cirsium* sp. wood, Gelen. 489; Seferli, on *Cupressus* sp. bark, Gelen. 98; Babatorun, *Cupressus* sp. bark, Baba. 429; Kıyıgören, on *Cirsium* sp. wood, Natural, Gelen. 455-458; Tokaçlı, on *Olea* sp. leaf, Natural, Gelen. 498; Kamberli, Natural, on *Cirsium* sp. wood, Baba. 538; Karsu, on *Cirsium* sp. wood, Gelen. 401; Mayadalı, on *Cupressus* sp. bark, Gelen. 278; Kılıçtutan, on *Quercus* sp. bark, Gelen. 599; Sivrikavak on *Myrtus* sp. wood, Gelen. 292; Enek on *Myrtus* sp. wood, Baba. 521; Oymaklı, on *Cupressus* sp. bark, Gelen. 463-469; Sarıbük, on *Quercus* sp. bark, Gelen. 305.

37. *D. dubium* Rostaf.; Karsu, on rotten rash, Gelen. 404; Kurt Mezrası, on rotten rash, Doğal, Gelen. 415; Babatorun, on *Cupressus* sp. wood, Gelen. 435; Yolağzı, on *Pinus* sp. wood, Gelen. 482; Kılıçtutan, on *Quercus* sp. bark, Gelen. 604; Kıyıgören, on *Cirsium* sp. wood, Gelen. 458; Boynuyoğun, on *Cupressus* sp. wood, Gelen. 219; Yarseli, on rotten rash, Gelen. 383; Kuyubaşı, on *Pinus* sp. wood, Gelen. 79; Oymaklı, on rotten rash, Gelen. 469; Sivrikavak, on rotten rash, Gelen. 474; Çetenli, on *Cupressus* sp. bark, Baba. 199.

38. *D. megalosporum* Berk. & M.A. Curtis; Büyükburç, on *Myrtus* sp. leaf, Gelen. 385; Toprakhisar, on *Cirsium* sp. wood, Natural, Gelen. 423; Tokaçlı, on *Olea* sp. leaf, Gelen. 496; Kurt Mezrası, on rotten rash, Gelen. 419; Yarseli, on *Cirsium* sp. wood, Natural, Gelen. 367-368; Kıyıgören, on *Cirsium* sp. wood, Natural, Baba. 450; Karsu, on *Myrtus* sp. wood, Gelen. 399; Ziyaret, on *Cirsium* sp. wood, Natural, Gelen. 488; Yanıkpınar, on *Cirsium* sp. wood, Natural, Baba. 368.

39. *D. squamulosum* (Alb.& Schw.) Fries; Kurt

Mezrası, on *Cirsium* sp. wood, Natural, Gelen. 417; Yarseli, on *Cirsium* sp. wood, Natural, Gelen. 367; Kazancık, on *Pinus* sp. wood, Gelen. 544; Babatorun, on *Cupressus* sp. bark, Gelen. 439; Karsu, on *Cupressus* sp. bark, Gelen. 409; Kılıçtutan, on *Quercus* sp. bark, Gelen. 611.

40. *D. trachysporum* G. Lister; Kurtmezrası, on animal manure, Natural, Baba. 415.

Physaraceae

41. *Badhamia dubia* Nann.-Bremek.; Sarıbük, on *Quercus* sp. bark, Gelen. 295.

42. *B. foliicola* A. Lister; Sarıbük, on drying paper, Gelen. 305.

43. *B. macrocarpa* (Ces.) Rost.; Erbaşı, on *Pinus* sp. wood, Gelen. 587; Kazancık, on *Pinus* sp. cone, Gelen. 620; Kozkalesi, on *Pinus* sp. wood, Baba. 38; Yanıkpınar, on rash, Gelen. 355; Yarseli, on *Cirsium* sp. bark, Gelen. 388.

44. *B. panicea* (Fries) Rost.; Sarıbük, on *Quercus* sp. bark, Gelen. 284.

45. *Physarum albescens* Ellis ex T. Macbr.; Babatorun, on *Cupressus* sp. wood, Gelen. 435; Karsu, on *Cupressus* sp. wood, Natural, Gelen. 395.

46. *P. album* (Bull.) Chevall.; Hanne Dağı, on *Pinus* sp. wood, Gelen. 153; Sarıbük, on *Quercus* sp. bark, Gelen. 297; Babatorun on *Cupressus* sp. wood, Gelen. 430; Kazancık, on *Pinus* sp. wood, Gelen. 536; Kozkalesi, on *Pinus* sp. wood, Gelen. 27; Seferli, on *Pinus* sp. wood, Gelen. 98; Akdarı on *Quercus* sp. bark, Gelen. 71.

47. *P. cinereum* (Batsch) Pers.; Kurt Mezrası, on *Cirsium* sp. wood, Natural, Gelen. 418; Yarseli, on *Cirsium* sp. wood and *Myrtus* sp. wood, Natural, Gelen. 368-379; Enek, on *Cupressus* sp. bark, Gelen. 516; Yanıkpınar, on *Cirsium* sp. wood, Natural, Gelen. 369; Ziyaret, on *Cirsium* sp. wood, Gelen. 488; Karsu, on *Cupressus* sp. bark, Gelen. 408; Kıyıgören, on *Cirsium* sp. wood, Gelen. 452; Hanne mountain, on *Pinus* sp. wood, Gelen. 157; Oymaklı, on *Cupressus* sp. bark and on *Myrtus* sp. wood, Gelen. 469.

48. *P. compressum* Alb.& Schw.; Dokuzdal, on *Cirsium* sp. wood, Natural, Gelen. 327; Kılıçtutan, on *Quercus* sp. wood, Gelen. 609.

49. *P. confertum* T. Macbr.; Yarseli, on *Allium cepa* L. root, Gelen. 379.

50. *P. contextum* (Pers.) Pers.; Kurt Mezrası, on *Cirsium* sp. wood, Natural, Gelen. 413; Tokaçlı, on rotten fruit of *Punica granatum* L., Gelen. 501; Sarıbük, on *Quercus* sp. wood, Gelen. 291.

51. *P. javanicum* Racib.; Tokaçlı, on drying paper, Gelen. 499.

52. *P. leucopheum* Fries; Yanıkpınar, on *Pinus* sp. wood, Gelen. 378; Altınkaya, on *Pinus* sp. wood, Baba. 178.

53. *P. licheniforme* (Schwein.) Lado; Sarıbük, on *Quercus* sp. bark, Gelen. 298; Enek, on *Cupressus* sp. bark, Baba. 521.

54. *P. notabile* Macbr.; Yanıkpınar, on *Pinus* sp. wood, Gelen. 364.

55. *P. oblatum* Macbr.; Seferli, on *Pinus* sp. wood, Gelen. 87.

56. *P. tropicale* T. Macbr.; Kılıçtutan, on *Quercus* sp. bark, Gelen. 608; Sarıbük, on *Quercus* sp. bark, Gelen. 282.

57. *P. viride* (Bull.) Pers; Kılıçtutan, on *Quercus* sp. bark, Baba. 606.

Stemonitales

Stemonitidaceae

58. *Collaria lurida* (G. Lister) Nann.-Bremek.; Yunushan, on *Pinus* sp. wood, Gelen. 559; Kozkalesi, on *Pinus* sp. wood, Gelen. 34; Erbaşı, on *Pinus* sp. wood, Gelen. 590; Kule, on *Pinus* sp. wood, Gelen. 266; Kuyubaşı, on *Pinus* sp. wood, Gelen. 77; Sarıbük, *Quercus* sp. wood, Baba. 290.

59. *Comatricha ellae* Härk.; Alakent, on *Cupressus* sp. wood, Gelen. 168; Akdarı, on *Quercus* sp. wood, Gelen. 65; Hanne mountain, on *Pinus* sp. wood, Gelen. 152; Sarıbük, on *Quercus* sp. wood, Gelen. 295; Dokuzdal, on *Pinus* sp. wood, Natural, Gelen. 337; Kule, on *Pinus* sp. wood, Gelen. 254; Yanıkpınar, on *Pinus* sp. wood, Natural, Baba. 359; Kılıçtutan, on *Quercus* sp. wood, Gelen. 599; Erbaşı, on *Pinus* sp. wood, Gelen. 581; Avuttepe, on *Pinus* sp. wood, Gelen. 573; Yunushan, on *Pinus* sp. wood, Gelen. 558; Kozkalesi, on *Pinus* sp. wood, Gelen. 29; Babatorun, on *Cupressus* sp. wood, Gelen. 433; Mayadalı, on *Cupressus* sp. wood, Baba. 275; Oymaklı, on drying paper, Gelen. 469.

60. *C. laxa* Rost.; Yanıkpınar, on *Pinus* sp. wood, Gelen. 363; Hanne mountain, *Pinus* sp. wood, Gelen. 159; Yolağzı, on *Pinus* sp. wood, Gelen. 482; Dokuzdal, on *Pinus* sp. wood, Gelen. 345; Kılıçtutan, on *Quercus* sp. bark, Gelen. 606; Kurtmezrası, on *Olea europaea* L. leaf, Gelen. 614; Kozkalesi, on *Pinus* sp. wood, Gelen. 28; Sarıbük, on *Quercus* sp. bark, Gelen. 296.

61. *C. nigra* (Pers.) J. Schröt.; Kurtmezrası, on rotten

rash, Natural, Gelen. 411; Toprakhisar, on rotten rash, Gelen. 425; Akdarı, on *Quercus* sp. bark, Natural, Gelen. 48,50; Hanne mountain, on *Pinus* sp. wood, Gelen. 156; Tokaçlı, on *Pinus* sp. wood, Gelen. 497; Ziyaret, on *Cupressus* sp. wood, Gelen. 488; Kılıçtutan, on *Quercus* sp. bark, Gelen. 607; Kozkalesi, on *Pinus* sp. wood, Gelen. 6; Karsu, on *Cupressus* sp. wood, Gelen. 409; Yanıkpınar, on *Pinus* sp. wood, Gelen. 397; Kule, on *Pinus* sp. wood, Gelen. 265; Yunushan, on *Pinus* sp. wood, Gelen. 556; Erbaşı, on *Pinus* sp. wood, Gelen. 589; Sarıbük, *Quercus* sp. bark, Gelen. 314; Kıyıgören, on *Cirsium* sp. and *Cupressus* sp. wood, Gelen. 458-459; Enek, on *Cupressus* sp. wood, Gelen. 521.

62. *Enerthenema papillatum* (Pers.) Rostaf; Dokuzdal, on *Pinus* sp. wood, Gelen. 333; Kılıçtutan, on *Quercus* sp. Wood, Gelen. 602; Yanıkpınar, on *Pinus* sp. wood, Gelen. 358; Hanne mountain, on *Pinus* sp. wood, Natural, Gelen. 153; Erbaşı, on *Pinus* sp. wood, Baba. 578; Kule, on *Pinus* sp. wood, Gelen. 259; Kozkalesi, on *Pinus* sp. wood, Gelen. 38.

63. *Lamproderma arcyrioides* (Sommerf.) Rostaf.; Karsu, on *Myrtus* sp. leaf, on drying paper, Baba. 401; Sivrikavak, on *Myrtus* sp. leaf, Natural, Gelen. 471.

64. *L. scintillans* (Berk. & Br.) Morgan; Kazancık, on rotten rash, Gelen. 532; Kurt Mezrası, on rash, Natural, Gelen. 415; Sarıbük, on *Quercus* sp. wood, Gelen. 293; Enek, on *Myrtus* sp. wood, Natural, Gelen. 514; Yunushan, on *Pinus* sp. wood, Gelen. 557; Sivrikavak, on *Myrtus* sp. wood, Natural, Gelen. 470.

65. *Macbrideola cornea* (G. Lister & Cran) Alexop.; Yanıkpınar, on *Pinus* sp. wood, Gelen. 372; Kılıçtutan, on *Quercus* sp. wood, Gelen. 604.

66. *M. decapillata* H.C. Gilbert; Kozkalesi, on *Pinus* sp. wood, Gelen. 27; Yolağzı, on *Pinus* sp. wood, Gelen. 486; Kurtmezrası, on root, Gelen. 414; Sarıbük on *Quercus* sp. wood, Gelen. 307; Yarseli, on *Cupressus* sp. bark, Gelen. 382.

67. *Stemonitis axifera* (Bull.) Macbr.; Sarıbük, on *Quercus* sp. wood, Gelen. 68.

68. *S. foliicola* Ing; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 46.

69. *S. fusca* Roth.; Akdarı, on *Quercus* sp. wood, Gelen. 58; Kozkalesi, on *Pinus* sp. wood, Gelen. 39; Altınkaya, on *Cupressus* sp. wood, Gelen. 179; Kule, on *Pinus* sp. wood, Gelen. 265; Mayadalı, on *Cupressus* sp. wood, Gelen. 279; Tokaçlı, on *Pinus* sp. wood, Gelen. 499; Büyükburç, on *Cupressus* sp. wood, Gelen. 391; Karsu, on *Cupressus* sp. wood, Gelen. 409; Sarıbük, on *Quercus* sp. bark, Gelen. 302; Kurt Mezrası, on rotten rash, Gelen. 419; Avuttepe, on *Pinus* sp. wood, Gelen. 576; Akamber, on *Quercus* sp. bark, Gelen. 509; Dokuzdal, on *Pinus* sp. wood, Gelen. 341; Kuseyr, on *Populus* sp. wood, Gelen. 129; Enek, on *Cupressus* sp. wood, Gelen. 513; Kuyubaşı, on *Pinus* sp. wood, Gelen. 77; Ziyaret, on rotten rash, Gelen. 496; Boynuyoğun, on *Cupressus* sp. bark, Gelen. 232; Çetenli, on *Cupressus* sp. bark, Gelen 199; Kazancık, on *Pinus* sp. wood, Gelen. 544.

70. *S. splendens* Rost.; Akdarı, on *Quercus* sp. wood, Natural, Gelen. 45.

71. *Stemonitopsis amoena* Nann.-Bremek.; Toprakhisar, on rotten rash, Gelen. 423; Akdarı, on *Quercus* sp. wood, Gelen. 63; Kozkalesi, on *Pinus* sp. wood, Gelen. 34; Erbaşı, on *Pinus* sp. wood, Gelen. 582.

72. *S. hyperopta* (Meylan) Nann.-Bremek.; Akdarı, on *Quercus* sp. wood, Gelen. 52; Kule, on *Pinus* sp. wood, Gelen. 266; Yunushan, on *Pinus* sp. wood, Gelen. 562; Sarıbük, on *Quercus* sp. wood, Gelen. 311.

73. *S. subcaespitosa* (Peck) Nann.-Bremek.; Altınkaya, on *Pinus* sp. wood, Gelen. 181; Kılıçtutan, on *Quercus* sp. wood, Gelen. 609; Kozkalesi, on *Pinus* sp. wood, Gelen. 33; Sarıbük, on *Quercus* sp. wood, Gelen. 307.

74. *S. typhina* (F.H. Wigg.) Nann.-Bremek; Sarıbük, on *Quercus* sp. wood, Gelen. 311.

Myxomycetes show the spread on the decayed Gymnosperm woods, leaves and debris. The members of Liceales, Trichiales and Stemonitales are generally known to spread in coniferous forests (Ergül and Akgül, 2011; Baba *et al.,* 2016). The myxomycete samples we identified in our study were obtained from *Pinus* sp. and *Quercus* sp., wood and debris.

Previous studies have reported that *E. minutum, A. cinerea* and *S. fusca* can grow on all kinds of substrates and in almost all parts of the world (Stephenson and Stempen, 1994). These species have also been identified in our study area.

In addition, *A. pomiformis, A. cinerea, C. ellae* and *C. nigra* were determined from many points in our study area. As well as the widespread detection of such a large part of the work done previously in Turkey support this description (Yağız and Afyon, 2007; Baba, 2015; Ergül *et al*., 2016).

Conclusion

In this study, 74 species of 11 families and 23 genera were determined in order to determine myxomycetes of Altınözü (Hatay) district of Turkey.

Table 1. Land dates and information about localities.

No	Location	Date	Altitude (m)	Coordinate
1	Akamber	11.09.2011-21.04.2012	339	36° 09' 39" N; 36°23' 28" E
2	Akdarı	16.09.2011-23.04.2012	389	36° 07' 59" N; 36° 23' 56" E
3	Alakent	29.10.2011	202	36° 14' 10" N; 36° 30' 28" E
4	Altınkaya	29.10.2011	316-350	36° 15' 59" N; 36° 25' 52" E
5	Atayurdu	29.10.2011	269	36° 17' 57" N; 36° 28' 11" E
6	Avuttepe	23.04.2012	460	36° 04' 26" N; 36° 26' 39" E
7	Babaturan	20.02.2012	459	36° 07' 53" N; 36° 29' 59" E
8	Boynuyoğun	30.10.2011	311	36° 16' 53" N; 36° 34' 03" E
9	Büyükburç	21.01.2012	287	36° 15' 58" N; 36° 28' 08" E
10	Çetenli	29.10.2011	237	36° 11' 31" N; 36° 29' 59" E
11	Dokudal	28.12.2011-23.04.2012	678	36° 17' 29" N; 36° 23' 17" E
12	Enek	21.04.2012	500	36° 15' 54" N; 36° 19' 57" E
13	Erbaşı	23.04.2012	651	36° 57' 52" N; 36° 24' 54" E
14	Hanne Mountain	11.09.2011-20.10.2011	303	36°10' 38" N; 36° 24' 27" E
15	Kamberli	21.04.2012	410	36° 12' 55" N; 36° 20' 40" E
16	Kansu	20.02.2012	451	36° 09' 59" N; 36° 34' 39" E
17	Karsu	21.01.2012	304	36°13' 39" N; 36° 27' 39" E
18	Kazancık	29.10.2011-21.04.2012	252	36°16' 38" N; 36° 25' 23" E
19	Keskincik	30.10.2011	427	36° 10' 57" N; 36° 32' 59" E
20	Kılıçtutan	23.04.2012	652	36° 56' 71" N; 36° 22' 51" E
21	Kıyıgören	20.02.2012	224	36° 14' 17" N; 36° 35' 56" E
22	Kozkalesi	15.09.2011-21.04.2012	479	36° 09' 54" N; 36° 19' 54" E
23	Kule	30.10.2011	449	36° 01' 31" N; 36° 30' 21" E
24	Kurt hamlet	21.01.2012	229	36° 16' 55" N; 36° 31' 09" E
25	Kuseyr Stream	7.10.2011	249	36° 10' 51" N; 36° 23' 50" E
26	Kuyubaşı	16.09.2011	507	35° 55' 21" N; 36° 27' 51" E
27	Mayadalı	30.10.2011	391	36° 11' 53" N; 36° 33' 51" E
28	Oymaklı	20.02.2012	359	36° 09' 17" N; 36° 29' 53" E
29	Sarıbük	30.10.2011	422	36° 02' 26" N; 36° 32' 15" E
30	Seferli	16.09.2011	592	36° 01' 58" N; 36° 26' 29" E
31	Sivrikavak	20.02.2012	409	36° 03' 51" N; 36° 29' 54" E
32	Tepehan	21.04.2012	250	36° 15' 59" N; 36° 23' 22" E
33	Tokaçlı	21.02.2012	364	36° 09' 59" N; 36° 26' 21" E
34	Toprakhisar	29.10.2011-21.01.2012	135	36° 15' 55" N; 36° 31' 57" E
35	Türkmen hamlet	28.12.2011	366	36° 07' 52" N; 36° 27' 39" E
36	Yanıkpınar	28.12.2011-23.04.2012	682	36° 02' 29" N; 36° 23' 58" E
37	Yarseli	30.10.2011	200	36° 17' 55" N; 36° 33' 43" E
38	Yiğityolu	16.09.2011	552	35° 99' 52" N; 36° 26' 59" E
39	Yolağzı	30.10.2011-20.02.2012	448	36° 05' 55" N; 36° 31' 55" E
40	Yunushan	21.04.2012	585	36° 02' 56" N; 36° 22' 32" E
41	Ziyaret	20.02.2012	305	36° 16' 35" N; 36° 35' 25" E

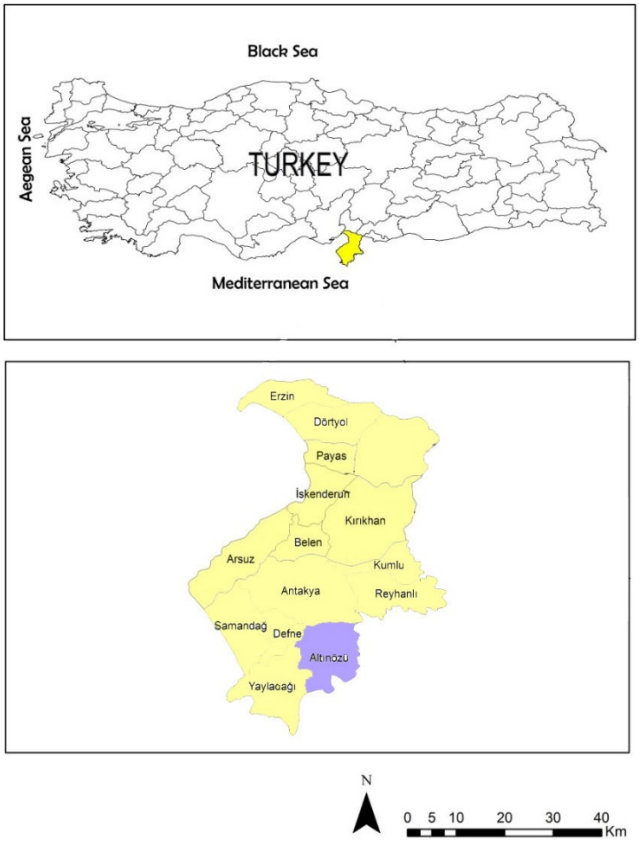

Fig. 1. Map of the research area.

Acknowledgement

This study was prepared from a thesis study on Myxomycota (Myxomycota), which is distributed in the district of Altınözü (Hatay). We would like to thank the MKU Scientific Research Projects Commission for supporting this study. Project No: 1105 Y 0109

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