

1-1-2004

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DEMİREL, KENAN; UZUN, YUSUF; and KAYA, ABDULLAH (2004) "Some Poisonous Fungi of East Anatolia," *Turkish Journal of Botany*. Vol. 28: No. 1, Article 23. Available at: <https://journals.tubitak.gov.tr/botany/vol28/iss1/23>

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Some Poisonous Fungi of East Anatolia

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Received: 27.07.2002
Accepted: 28.01.2003

Abstract: This study was carried out on some poisonous macrofungi samples collected from the East Anatolia region. As a result of field and laboratory studies, 36 poisonous taxa belonging to *Ascomycetes* and *Basidiomycetes* were identified. The identified taxa are given with their distributions, habitat and substrates, collection dates and collectors' numbers.

One of the species, *Amanita eliae* Qué. (*Amanitaceae*), is a new record for the poisonous fungi of Turkey.

Key Words: Poisonous macrofungi, East Anatolia, Turkey

Doğu Anadolunun Bazı Zehirli Mantarları

Özet: Bu çalışma Doğu Anadolu Bölgesi'nden toplanan bazı zehirli makromantarlar üzerinde yapıldı. Arazi ve laboratuvar çalışmaları sonucunda *Ascomycetes* ve *Basidiomycetes* sınıflarına ait 36 zehirli mantar belirlendi. Teşhis edilen taksonların dağılımları, habitat ve substratları ile toplanma tarihleri ve toplama numaraları verildi.

Diğer yandan *Amanita eliae* Qué. (*Amanitaceae*), türü Türkiye mantar florası için yeni kayıttır.

Anahtar Sözcükler: Zehirli Makrofunguslar, Doğu Anadolu, Türkiye

Introduction

Turkey has a rich macrofungi flora and some mushroom poisoning headlines can be seen, especially during spring and autumn, due to careless or inexperienced mycophagy. According to the literature, about 100-110 fatalities were reported in a period of 25 years after 1970 (Mat, 1998). Such events emphasise the importance and necessity of mycofloristic studies in Turkey.

Several studies have been carried out since 1993, to determine macrofungi species in the East Anatolia region. Many taxa of macrofungi have been identified from these studies (Gücin, 1983; Işiloğlu & Öder, 1995; Demirel, 1996; Demirel & Uzun, 1996; Uzun & Demirel, 1998; Demirel & Nacar, 2000; Kaya, 2001; Demirel et al. 2002). In addition to these publications, we collected macrofungi from various regions of East Anatolia between 1993 and 2001. At the end of the field and laboratory studies, 36 poisonous macrofungi taxa belonging to 2 classes and 13 families were identified.

The aim of this study is to make a contribution to the prevention of mushroom poisoning incidents by determining the poisonous macrofungi growing in this region of Turkey.

Materials and Methods

The specimens were collected during field trips carried out in Ağrı, Ardahan, Bitlis, Erzurum, Iğdır, Kars, Muş, Tunceli and Van provinces (Figure 1) between 1993 and 2001. The necessary notes were taken at their natural habitats. The macrofungi samples were then brought to the laboratory and spore prints were obtained for each specimen. After microscopic investigations, they were identified with the help of Moser (1983), Phillips (1981), Buczacki (1989), Breitenbach & Kränzlin (1984-1995) and Jordan (1995).

The specimens are kept in the herbarium of the Biology Department of Yüzüncü Yıl University in Van and the Faculty of Education in Adıyaman.

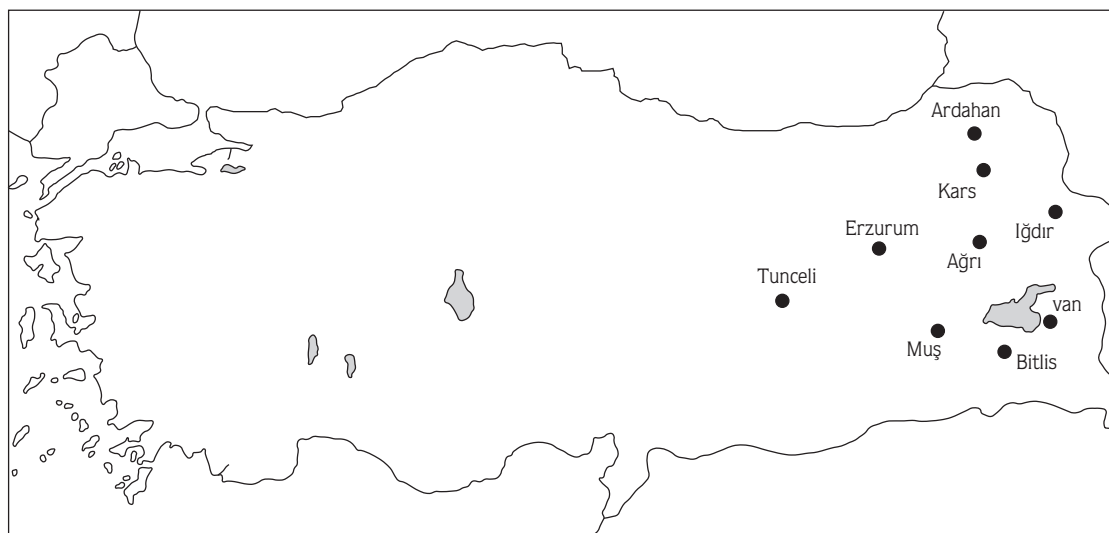


Figure 1. Collection sites for macrofungi in East Anatolia.

Results

The identified samples are listed in alphabetic order. For each species, the locality, habitat or substrate, collection date and personal herbarium number are given. They were classified in terms of the syndromes they cause with the help of Bresinsky & Besl (1990), Benjamin (1995) and Gücin & Işıloğlu (2000), and these are given in table form (Table 1). New species for the Turkish mycoflora are indicated with an asterisk.

ASCOMYCETES

Pezizaceae

1. *Sarcosphaera crassa* (Santi. ex Steud.) Pouz.

Erzurum, Şenkaya, Sındıran village, under coniferous woods, 13 vi 1998, D.U.K. 1247.

BASIDIOMYCETES

Boletaceae

2. *Boletus luridus* Schaeff.: Fr.

Erzurum, Oltu, Ormanağzı village, under coniferous woods, 23 vii 1999, D.1372. Ardahan, between Ardahan and Göle, under coniferous woods, 15 viii 2001, U. 643.

3. *Boletus satanas* Lenz

Erzurum, Olur, Beğendik village, under mixed woods, 22 vii 1999, D. 1356.

Agaricaceae

4. *Agaricus xanthodermus* Genev.

Bitlis, Ahlat, Kavaklı village, meadow, 18 x 1998, K. 628. Muş, in grasses, 19 xi 1999, K. 904. Ağrı, Eleşkirt, under poplar trees, 23 x 1999, D.U.K. 1494. Erzurum, Pasinler, under poplar trees, 05 vi 2000, D.K. 1606. Kars, Sarıkamış, Köroğlu village, meadows, 17 vi 1995, D.U. 648. Van, Erciş, under poplar trees, 29 v 2000, D.K. 1666. Ardahan, Göle, meadows 20 vi 2000, U.92.

5. *Agaricus xanthodermus* Genev. var. *lepiotoides* Mre.

Kars, Sarıkamış, Sırbasan village, meadows, 23 vii 1994, D.U. 482.

6. *Agaricus praelaresquamosus* Freeman

= *A. placomyces* Peck.

= *A. meleagris* (Schaeff.) Imbach

Van, Yüzüncü Yıl University area, 17 x 2000, D.K. 1839. Ardahan, Göle, high plateau of Göle, under coniferous woods, 12 viii 2000. U. 400.

Amanitaceae

7. *A. solitaria* (Bull.: Fr.) Mérat

Bitlis, Tatvan, Budaklı village, steppe, 02 vi 1998, K. 498.

8. *A. echinocephala* (Vitt.) Qué!

Table. Diagnosis and Management of Mushroom Poisoning.

Type of syndrome	Initial signs, symptoms and clinical features	Species
Coprinus syndrome (with alcohol)	Headaches, facial flushing, tachycardia, nausea, vomiting	<i>Coprinus atramentarius</i> , <i>Pholiota squarrosa</i>
Gastrointestinal syndrome	Nausea, vomiting, diarrhoea, abdominal pain	<i>Agaricus xanthodermus</i> , <i>A. praeclarisquamosus</i> , <i>A. xanthodermus</i> var. <i>lepiotoides</i> , <i>Boletus satanas</i> , <i>Entoloma incanum</i> , <i>E. sericellum</i> , <i>E. sericeoides</i> , <i>E. sinuatum</i> , <i>Hebeloma fusipes</i> , <i>H. mesophaeum</i> , <i>H. sinapizans</i> , <i>Hypholoma fasciculare</i> , <i>Tricholoma scalpturatum</i> , <i>T. ustale</i> .
Muscarine syndrome	Perspiration, lacrimation, nausea, salivation, bradycardia	<i>Inocybe dulcamara</i> , <i>I. fastigiata</i> , <i>I. patouillardii</i>
Pantherine syndrome	Nausea, ataxia, confusion, delirium, sleep/coma, hallucinations, muscle fasciculations	<i>Amanita muscaria</i> , <i>A. pantherina</i> , <i>A. gemmata</i>
Paxillus syndrome	Gastrointestinal symptoms, immune haemolytic anaemia,	<i>Paxillus involutus</i> , <i>P. rubicundulus</i>
Phalloides syndrome	Vomiting, diarrhea, abdominal pain, liver failure (possible renal failure)	<i>Amanita echinocephala</i> , <i>A. solitaria</i> , <i>Lepiota cristata</i>
Psilocybin syndrome	Dysphoria, euphoria, sense of exhilaration, hallucinations, mydriasis	<i>Panaeolus foenicicii</i> , <i>P. olivaceus</i> , <i>Pluteus salicinus</i>

Erzurum, Olur, Atlıköy village, under poplar trees, 21 vii 1999, D. 1328. Ardahan, Göle, high plateau of Göle, under coniferous woods, 15 viii 2001. U. 635.

***9. *A. eliae* Qué.**

Ardahan, under coniferous woods, 08 vii 2001, U. 2282.

10. *A. gemmata* (Fr.) Gillet

Erzurum, Şenkaya, Sındıran village, under coniferous woods, 13 vi 1998, D.U.K. 1235.

11. *A. muscaria* (L.:Fr.) Hook.

Kars, Sarıkamış, Soğuksu area, under coniferous woods, 28 viii 1994, D.U. 502. Ardahan, Göle, high plateau of Göle, under coniferous woods, 15 viii 2001. U. 700.

12. *A. pantherina* (DC.: Fr.) Krbh.

Erzurum, Şenkaya, Sındıran village, under coniferous woods, 13 vi 1998, D.U.K. 1271. Olur, Alu? village, under coniferous woods, 21 vii 1999, D. 1319.

13. *A. rubescens* (Pers.: Fr.) Gray

Erzurum, Gaziler village, in mixed woods, 24 vi 1997, U. 1094.

Coprinaceae

14. *Coprinus atramentarius* (Bull.: Fr.) Fr.

Van, Elmalı village, under willow trees, 27 v 1993, D. 0157. Gürpınar, under willow trees, 10 xi 1993, D. 220. Kars, Sarıkamış, under willow trees, 23 v 1994, D.U. 584. Bitlis, Tatvan, Koruklu village, in unplanted garden, 12 x 1997, K. 088. Bitlis, Adilcevaz, Kavuştuk village, meadow, 23 v 1998, K. 391. Bitlis, Ahlat, Taşhamam village, under *Populus* sp., 18 x 1998, K. 637. Muş, Varto, Tepe village, meadow, 21 vi 1998, K. 526. Muş, Malazgirt, around decaying poplar remains, 21 x 1998, K. 640. Erzurum, Şenkaya, Gaziler village, under *Prunus* sp., 23 vi 1997, U.1110. Ağrı, under poplar trees, 23 x 1999, D.K. 1490. Ağrı, Patnos, Under poplar trees, 01 vi 2000, D.K. 1507. Erzurum, Pasinler, under poplar trees, 05 vi 2000, D.K. 1610. Van, Muradiye, under willow trees, 11 vi 2000, D.K. 1695. Iğdır, Aralık, Taşburnu village in garden, under willow trees, 26 iv 2000 U.15. Iğdır, Suveren village, under *populus* sp., 20 v 2000 U.23. Ardahan, Göle, Çakırüzüm village, under *populus* sp., 14 vi 2000. U. 73.

15. *Panaeolus foenicicii* (Pers.: Fr.) Schroet.

Muş, Hasköy, Büvetli village, meadow, 17 v 1998, K.

300. Erzurum, Şenkaya, Taht village, under poplar trees, 30 v 1997, U. 909.

16. P. olivaceus Møller

Muş, Hasköy, Büvetli village, meadow, on remains of dung, 17 v 1998, K. 300.

Entolomaceae

17. Entoloma incanum (Fr.) Hes.

Bitlis, in garden of Arıcılık Enst. Müd. under *Populus* sp., 16 v 1998, K. 292.

18. E. sericellum (Fr.: Fr.) Kumm.

Bitlis, Adilcevaz, Göldüzü village, meadow, 23 v 1998, K. 385.

19. E. sericeoides (Lge.) Noordel.

Bitlis, Adilcevaz, under *Populus* sp., 21 v 1998, K. 378.

20. E. sinuatum (Bull. ex Fr.) Kumm.

Muş, Soğucak village, under mixed woods, 01 vi 1998, K. 488. Mercimekkale, 21 vi 198, K. 539.

Lepiotaceae

21. Lepiota cristata (Bolt.: Fr.) Kumm.

Muş, Soğucak village, under mixed wood, 01 vi 1998, K. 474. Erzurum, Olur, Beğendik village, under mixed woods, 22 vii 1999, D. 1358. Ispir, riverside, 05 xi 1999, D. 1461.

Paxillaceae

22. Paxillus involutus (Batsch: Fr.) Fr.

Bitlis, Güroymak, in poplar grove, 23 x 1998, K. 667. Muş, Soğucak village, 03 x 1998, K. 587. Erzurum, Şenkaya, Gaziler village, under poplar trees, 23 vi 1997, U.1103. Ağrı, Taşlıçay, Esendere village, under poplar trees, 11 vi 1998, D.U.K. 1136. Erzurum, Şenkaya, Sındıran village, under mixed woods, 13 vi 1998, D.U.K. 1185. Ağrı, Eleşkirt, under poplar trees, 05 vi 2000, D.K. 1620. Van, Erciş, under poplar trees, 30 v 2000, D.K. 1832. Ardahan, under coniferous woods, 15 viii 2001, U. 647.

23. P. rubicundulus Ort.

Muş, under poplar trees, 16 v 1998. K. 330.

Pluteaceae

24. Pluteus salicinus (Pers.: Fr.) Kumm.

Bitlis, Tatvan, Obuz village, under *Quercus* sp., 20 xi 1999, K. 909.

Strophariaceae

25. Hypholoma fasciculare (Huds.: Fr.) Kumm.

Bitlis, Tatvan, Koyluca village, on decomposing *Quercus* stump, 20 vi 1998, K. 513. Muş: Hasköy, Büvetli village, around *Quercus* sp. stumps, 17 v 1998, K. 310.

26. Pholiota squarrosa (Pers.: Fr.) Kumm.

Bitlis, Tatvan, Koyluca village, on *Juglans* sp., 12 x 1997, K. 084. Obuz village, on *Juglans* sp., 24 x 1998, K. 683. on *Pyrus* sp., 24 x 1998, K. 684. Erzurum, Olur, Atlıköy village, under *Quercus* sp., 21 viii 1999, D.1337.

Tricholomataceae

27. Tricholoma scalpturatum (Fr.) Quéf.

Bitlis, in poplar grove, 16 v 1998, K. 286.

28. T. ustale Fr.

Kars, Sarıkamış, Soğuksu area, under mixed woods, 17 xi 1994, D.U. 514.

Cortinariaceae

29. Hebeloma fusipes Bres.

Bitlis, Tatvan, Dibekli village, under mixed woods, 05 xi 1998, K. 555. Muş, Soğucak village, 03 x 1998, K. 588. Van, Erciş, under poplar trees, 30 v 2000, D.K. 1837.

30. H. mesophaeum (Pers.: Fr.) Schroet.

Bitlis, Tatvan, Dibekli village, under mixed woods, 05 xi 1998, K. 557.

31. H. sinapizans (Paulet: Fr.) Gill.

Bitlis, Güroymak, under *Populus* sp., 03 x 1998, K. 578. Muş, Yarpuzlu village, 03 x 1998, K. 582.

32. Inocybe dulcamara (A. & S. : Pers.) Kumm.

Bitlis, Tatvan, Yelkenli village, under *Quercus* sp., 30 v 1998, K. 430.

33. I. fastigiata (Schaeff.: Fr.) Quéf.

Van, under poplar trees, 22 v 1993, D. 270. Kars, Sarıkamış, under mixed woods, 22 vi 1995, D.U. 619. Erzurum, Gaziler village, under mixed woods, 14 viii 1997, U. 964. Bitlis, Ahlat, meadow, 24 v 1998, K. 408. Muş: Korkut, Altınova village, meadow, 12 v 1997, K. 034. Bitlis, Adilcevaz, Göldüzü village, under *Populus* sp.,

23 v 1998, K. 392. Erzurum, Oltu, Ormanağzı village, under mixed woods, 23 vii 1999, D. 1369. Iğdır, centre, under willas trees 24 iv 2000 U. 03. Iğdır Melekli village, under poplar trees (20 v 2000) U. 30. Iğdır centre, Alkamer village, under poplar trees, 29 iv 2001 U. 320

34. *I. patouillardii* Bres.

Bitlis, Tatvan, Obuz village, mixed woods, 15.8.1998, K. 543.

Russulaceae

35. *Russula betulorum* Hora.

Erzurum, Şenkaya, Gaziler village, under mixed woods, 14 viii 1997, U. 964. Oltu, Ormanağzı village, under mixed woods, 23 vii 1999, D. 1369. Kars, Sarıkamış, under mixed woods, 22 vi 1995, D.U. 675.

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36. *R. luteotacta* Rea.

Kars, Sarıkamış, Soğuksu area, under coniferous woods, 27 viii 1994, D.U. 554.

Discussion

A total of 36 poisonous macrofungi taxa belonging to *Ascomycetes* and *Basidiomycetes* were determined from the East Anatolia region of Turkey. One of them, *A. eliae*, was added to the macrofungal flora of Turkey for the first time. Among these 36 macrofungi, *Coprinus atramentarius* "eşekmantarı" (donkey mushroom), *Boletus satanas* and *Boletus luridus* "ayımantarı" (bear mushroom) are the only 3 known to the general public living in this area. The other taxa are not normally recognised.