

## ***Leucocoprinus cepistipes*, A New Coprinoid Species Record for Turkish Macromycota**

Yasin UZUN<sup>1</sup>, Abdullah KAYA\*<sup>1</sup>

<sup>1</sup>Karamanoğlu Mehmetbey University, Science Faculty, Department of Biology, 70100, Karaman

(Alınış / Received: 28.07.2017, Kabul / Accepted: 13.11.2017, Online Yayınlanma / Published Online: 19.12.2017)

### **Keywords**

Macrofungi,  
New record,  
*Leucocoprinus*,  
Rize,  
Turkey

**Abstract:** Though the history of macrofungal studies on Turkish macromycota goes back to almost 100 years and the number of them have increased particularly in the last 3 decades, the accumulated data presents about 2400 taxa. Compared to the 15.000 assumed macrofungi of Europe and the macrofungal diversity estimates of Mueller et al. regarding the plant/macrofungus ratios of temperate regions, there is still much to be done to obtain the overall macrofungal data of Turkey. To contribute to the macrofungal biodiversity of Turkey, this study was carried out, and a new coprinoid species, *Leucocoprinus cepistipes* (Sowerby) Pat. belonging to the family Agaricaceae, is given as new record for the macromycota of Turkey from Ardeşen district of Rize province. The taxon is described briefly and photographs related to its macro and micromorphologies are given.

## ***Leucocoprinus cepaestipes*, Türkiye Makromikotası için Yeni Bir Coprinoid Tür Kaydı**

### **Anahtar Kelimeler**

Makromantarlar,  
Yeni kayıt,  
*Leucocoprinus*,  
Rize,  
Türkiye

**Özet:** Türkiye makromikotası ile ilgili çalışmaların tarihi neredeyse 100 yıl kadar geriye gitse ve bunların sayısı özellikle son 30 yılda artsa da, biriken data yaklaşık 2400 taksonu ortaya koymaktadır. Avrupada varlığı kabul edilen 15.000 mantar ve Mueller ve arkadaşlarının ılıman bölgelerin bitki/makromantar çeşitliliğine ilişkin tahminleri ile karşılaştırıldığında, Türkiye'nin bütüncül makromantar datasının elde edilebilmesi için daha yapılması gereken çok işin olduğu muhakkaktır. Türkiye makromantar biyoçeşitliliğine katkı sağlamak amacıyla bu çalışma gerçekleştirilmiş ve Agaricaceae familyasına ait yeni bir coprinoid türü olan *Leucocoprinus cepistipes* (Sowerby) Pat., Rize'nin Ardeşen ilçesinden Türkiye makromikotası için yeni kayıt olarak verilmiştir. Takson kısaca betimlenerek makro ve mikromorfolojisine ait fotoğrafları verilmiştir.

### **1. Introduction**

*Leucocoprinus* Pat. is a genus of the family Agaricaceae with about 40 species [1]. The members of the genus have a cosmopolitan distribution and characterized by small to medium, lepiotoid to coprinoid basidiocarp; convex to plane, membranous, radially sulcate or striate pileus; free, whitish and crowded lamellae; cylindrical, hollow, rarely bulbous, central stipe; membranous annulus; clavate, tetrasporic, sometimes bisporic to monosporic basidia; ellipsoid, hyaline, smooth, dextrinoid, thick walled and apically germ pored basidiospores. Though the members of the genus resemble the species of *Leucoagaricus* Locq. ex Singer and *Macrolepiota* Singer, they are differentiated from *Macrolepiota* by their small sized basidiocarps and by the absence of clamp connection, while they can be distinguished from *Leucoagaricus* by their fragile, coprinoid, plicate-sulcate pileal margins [2].

During our routine field studies, carried out to determine the macrofungal diversity of Ardeşen (Rize) district, within the scope of a university research fund project, some white coprinoid fungi samples were collected and identified as *Leucocoprinus cepistipes* (Sowerby) Pat.

So far six species of *Leucocoprinus* (*L. badhamii* (Berk. & Broome) Locq., *L. birnbaumii* (Corda) Singer, *L. cygneus* (J.E. Lange) Bon, *L. lanzonii* Bon, Migl. & Brunori, *L. straminellus* (Bagl.) Narducci & Caroti and *L. jubilaei* (Joss.) Wasser) [3, 4, 5, 6, 7, 8] have been recorded from Turkey, and the current checklists on the macromycota of Turkey [7, 8] and some latest contributory studies [9-25] indicate that *L. cepistipes* had not been recorded from Turkey yet.

The study aims to make a contribution to the mycobiota of Turkey.

\*Corresponding author: kayaabd@hotmail.com

## 2. Material and Method

*Leucocoprinus* Pat. samples were collected from Ardeşen (Rize) district in 2017. During collection necessary ecological and morphological characteristics of the samples were recorded and they were photographed in their natural habitat. Then the specimens were transferred to the lab within paper bags. Microscopic studies were carried out under Nikon Eclipse Ci trinocular light microscope. Photographs related to micromorphology were taken by DS-Fi2 digital camera. Meltzer's reagent was used to dye the histological preparations. The samples were identified with the help of Candusso and Lanzoni [26], Breitenbach and Kränzlin [27], Jordan [28], Lopez and Garcia [29], Pushpa and Purushothama [2], Kuo [30] and Desjardin et al. [31]. *Leucocoprinus* samples are kept at Karamanoğlu Mehmetbey University, Kamil Özdağ Science Faculty, Department of Biology.

## 3. Results

Sytematic of the taxon is in accordance with Kirk et al. (2008) and speciesfungorum.org (accessed on 20 July 2017). Description of macroscopic and microscopic characters, ecology, and the distribution of the species are provided, and discussed briefly.

**Basidiomycota** R.T. Moore

**Agaricales** Underw.

**Agaricaceae** Chevall.

***Leucocoprinus*** Pat.

***Leucocoprinus cepistipes*** (Sowerby) Pat.

**Syn:** [*Agaricus cepistipes* Sowerby, *Agaricus cepistipes* Sowerby, var. *cepistipes*, *Agaricus cepistipes* var. *luteus* Pers., *Agaricus cepistipes* var. *nigrescens* Bagl., *Agaricus cheimonoceps* Berk. & M.A. Curtis, *Agaricus luteus* With., *Agaricus praealtus* J.F. Gmel., *Agaricus rorulentus* Panizzi, *Agaricus sordescens* Berk. & M.A. Curtis, *Coprinus cepistipes* (Sowerby) Gray, *Coprinus cepistipes* (Sowerby) Gray, var. *cepistipes*, *Hiatula cepistipes* (Sowerby) R. Heim & Romagn., *Hiatula cepistipes* (Sowerby) R. Heim & Romagn var. *cepistipes*, *Lepiota cepistipes* (Sowerby) P. Kumm., *Lepiota cepistipes* (Sowerby) P. Kumm. var. *cepistipes*, *Lepiota cepistipes* var. *cheimonoceps* (Berk. & M.A. Curtis) Rick, *Lepiota cepistipes* var. *lutea* (Pers.) Qué., *Lepiota cepistipes* var. *praealta* Sacc. & Traverso, *Lepiota cepistipes* var. *rorulenta* (Panizzi) Rick, *Lepiota cepistipes* var. *sordescens* (Berk. & M.A. Curtis) Rick, *Lepiota cheimonoceps* (Berk. & M.A. Curtis) Sacc., *Lepiota hiatuloides* Raithelh., *Lepiota rorulenta* (Panizzi) Sacc., *Lepiota sordescens* (Berk. & M.A. Curtis) Sacc., *Lepista lutea* (Pers.) Godfrin, *Leucocoprinus cepistipes* (Sowerby) Pat. f. *cepistipes*, *Leucocoprinus cepistipes* f. *macrosporus* Migl., *Leucocoprinus cepistipes* (Sowerby) Pat. var. *cepistipes*, *Leucocoprinus cepistipes* var. *hiatuloides*

Raithelh., *Leucocoprinus cepistipes* var. *pseudofarinosus* Raithelh., *Leucocoprinus cepistipes* var. *rorulentus* (Panizzi) Babos, *Mastocephalus cepistipes* (Sowerby) Kuntze, *Mastocephalus cheimonoceps* (Berk and Curtis) Kuntze, *Mastocephalus rorulentus* (Panizzi) Kuntze, *Mastocephalus sordescens* (Berk and Curtis) Kuntze, *Sclerotium mycetospora* Nees ex Fr.]

**Macroscopic features:** Cap 30-50 mm in diameter, at first narrowly ovoid, then conic campanulate and finally broadly convex to plano-convex or seldomly plane, central obtuse umbo becomes apparent at maturity, surface pure white to greyish white, darker at the center, powdery with soft, whitish scales and granules, margin somewhat incurved, striate and splitting, often hung with scattered veil fragments. Flesh thin, soft, white, odour and taste mild to not distinctive. Gills free, white when young then pallid to pale buff. Stipe 40-70 × 4-7 mm, cylindrical, straight to sinuous, hollow, tapering towards the apex with a white membranous annulus on the upper part, somewhat bulbous at the base, sometimes with scattered soft powdery remains, white, surface smooth to sparcely pruinose (Figure 1).

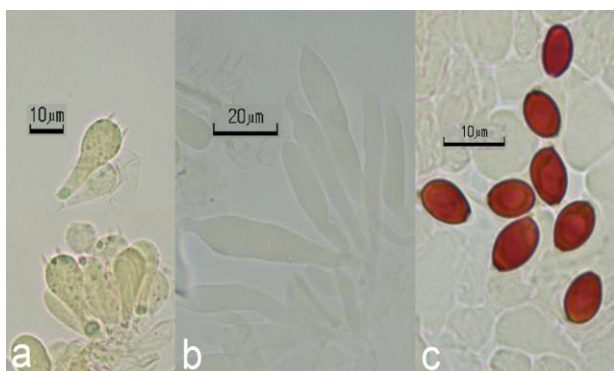
**Microscopic features:** Basidia 25-30 × 9-13 µm, clavate, bearing four sterigmata. Cheilocystidia 35-60 × 12-18 µm, clavate to mucronate, with a long, flexuous neck, thin walled, smooth. Pleurocystidia not observed. Spores 8.5-11 × 5.5-6.8 µm, ellipsoid, hyaline, smooth (Figure 2), weakly to strongly dextrinoid; spore print white.



**Figure 1.** Basidiocarps of *Leucocoprinus cepistipes*

**Ecology:** Scattered to clustered on leaf litter or woody debris [2, 26, 31], cultivated soil, gardens [30], in flowerpots, greenhouses [1, 27, 28, 32] throughout the year.

**Specimen examined:** Rize–Ardeşen, Akdere village, roadside, on wood shavings, 41°08'N-41°02'E, 300 m, 13.10.2016, Yuzun 5334.



**Figure 2.** a. basidia, b. cheilocystidia, c. basidiospores of *Leucocoprinus cepistipes*

#### 4. Discussion and Conclusion

*Leucocoprinus cepistipes* is a whitish and softly scaly-powdery capped lepiotoid mushroom that fruits primarily in parks, gardens, golf courses etc., as well as native woodlands especially on well decomposed woody litter. Generally the characteristics of the investigated sample coincide with those given in literature [2, 26-28, 31].

*Leucocoprinus cepistipes* had some similarities with some other agaricoid, lepiotoid and coprinoid taxa. For example, it may be confused with *Leucocoprinus brebissonii* (Godey) Locq., *L. birnbaumii* (Corda) Singer, *L. cretatus* Locq. and *L. lilacinogranulosus* (Hennings) Locq. in terms of general morphology or habitat. Among them, *L. brebissonii* grows freely in nature, usually in hardwood forests on leaf litter and have dark brown disc and squamules [26, 27]. *L. cretatus* differs with a snow-white and strongly floccose pileus and stipe [30] while *L. lilacinogranulosus* differs with pink to lilac squamules and a concolorous disc [27]. Likewise, *L. birnbaumii* is easily differentiated by a bright-yellow, finely-scaled, bell-shaped, striate cap, thin, collar-like annulus, and free, yellowish gills [4].

With this study, *Leucocoprinus cepistipes* was added to Turkish mycobiota as new record increasing the current taxa number of this genus to seven.

#### Acknowledgment

The authors would like to thank Karamanoğlu Mehmetbey University Research Fund for supporting the Project (16-M-16) financially.

#### References

- [1] Kirk, P.M., Cannon, P.F., Minter, D.W., Stalpers, J.A. 2008. Dictionary of the Fungi, 10th ed. CAB International, Wallingford.
- [2] Pushpa, H., Purushothama, K.B. 2011. *Leucocoprinus* Pat. (Agaricaceae, Agaricales, Basidiomycota) in Bengaluru, Karnataka State,

- India. World Applied Sciences Journal, 14(3), 470-475.
- [3] Kaya, A. 2009. Macrofungi of Huzurlu high plateau (Gaziantep-Turkey). Turkish Journal of Botany, 33, 429-437.
- [4] Günay, N., Demirel, K. 2006. Düziçi ve Bahçe (Osmaniye) Yöresinde Yetişen Makrofunguslar Üzerinde Taksonomik Bir Araştırma, Yüzüncü Yıl University Journal of the Institute of Natural & Applied Sciences, 11(1), 17-24.
- [5] Watling, R., Gregory, N.M. 1977. Larger fungi from Turkey, Iran and neighbouring countries. Karstenia, 17, 59-72.
- [6] Türkoğlu, A., Allı, H., Işıloğlu, M., Yağız, D., Gezer, K. 2008. Macrofungal diversity of Uşak province in Turkey. Mycotaxon, 104, 365-368 + 1-11 (a full checklist at <http://www.egitim.selcuk.edu.tr/fen/yagiz/pdf/Mycotaxon08-002.pdf>).
- [7] Sesli, E., Denchev, C.M. 2014. Checklists of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. 6th edn. Mycotaxon Checklists Online. (<http://www.mycotaxon.com/resources/checklists/sesli-v106-checklist.pdf>), 1-136.
- [8] Solak, M.H., Işıloğlu, M., Kalmış, E., Allı, H. 2015. Macrofungi of Turkey Checklist Vol II. Üniversiteler ofset, İzmir.
- [9] Dengiz, Y., Demirel, K. 2016. Şirvan (Siirt) Yöresinde Yetişen Makrofunguslar Üzerinde Taksonomik Bir Araştırma. Yüzüncü Yıl University Journal of the Institute of Natural & Applied Sciences, 21(2), 112-123.
- [10] Uzun, Y., Kaya, A., Karacan, İ.H., Yakar, S. 2017. New additions to Turkish Agaricales. Biological Diversity and Conservation, 10(2), 8-13.
- [11] Öztürk, Ö., Doğan, H.H., Şanda, M.A. 2016. Some new additions to Turkish mycobiota from Sakarya region. Biological Diversity and Conservation, 9(1), 97-100.
- [12] Sesli, E., Türkekul, İ., Akata, I., Niskanen, T. 2016. New records of Basidiomycota from Trabzon, Tokat, and İstanbul provinces in Turkey. Turkish Journal of Botany, 40(5), 531-545.
- [13] Akata, I., Uzun, Y., Kaya, A. 2016. Macrofungal diversity of Zigana Mountain (Gümüşhane/Turkey). Biological Diversity and Conservation, 9(2), 57-69.
- [14] Akata, I., Uzun, Y. 2017. Macrofungi Determined in Uzungöl Nature Park (Trabzon). Trakya University Journal of Natural Sciences, 18(1), 15-24.
- [15] Uzun, Y., Demirel, K. 2017. A New *Mycena* Record for the Mycobiota of Turkey. Anatolian Journal of Botany, 1(1), 9-11.

- [16] Uzun, Y., Acar, İ., Akçay, M.E., Kaya, A. 2017. Contributions to the macrofungi of Bingöl, Turkey. *Turkish Journal of Botany*, 41, 516-534.
- [17] Akçay, M.E., Uzun, Y. 2016. *Belonidium mollissimum* (Lachnaceae): Türkiye Mikotası İçin Yeni Bir Tür. *The Journal of Fungus*, 7(2), 118-121.
- [18] Allı, H., Çöl, B., Şen, İ. 2017. Macrofungi biodiversity of Kütahya (Turkey) province. *Biological Diversity and Conservation*, 10(1), 133-143.
- [19] Demirel, K., Uzun, Y., Keleş, A., Akçay, M.E., Acar, İ. 2017. Macrofungi of Karagöl-Sahara National Park (Şavşat-Artvin/Turkey). *Biological Diversity and Conservation*, 10(2), 32-40.
- [20] Demirel, K., Acar, İ., Ömeroğlu Boztepe, G. 2016. Lice (Diyarbakır) Yöresi Makrofungusları. *Mantar Dergisi / The Journal of Fungus*, 7(1), 29-39.
- [21] Işık, H., Türkekul, İ. 2017. A new record for Turkish mycota from Akdağmadeni (Yozgat) province: *Russula decolorans* (Fr.) Fr. *Anatolian Journal of Botany*, 1(1), 1-3.
- [22] Öztürk, C., Pamukçu, D., Aktaş, S. 2017. Nallıhan (Ankara) İlçesi Makrofungusları. *The Journal of Fungus*, 8(1), 60-67.
- [23] Sesli, E., Vizzini, A. 2017. Two new *Rhodocybe* species (sect. *Rufobrunnea*, Entolomataceae) from the East Black Sea coast of Turkey. *Turkish Journal of Botany*, 41(2), 200-210.
- [24] Sesli, E., Topçu Sesli, A. 2016. Türkiye için üç yeni kayıt: *Chalciporus piperatooides*, *Gymnopus menehune* ve *Lyophyllum shimeji*. *The Journal of Fungus*, 7(1), 61-66.
- [25] Uzun, Y., Karacan, İ.H., Yakar, S., Kaya, A. 2017. *Octospora* Hedw., A New Genus Record for Turkish Pyronemataceae. *Anatolian Journal of Botany* 1(1): 18-20.
- [26] Candusso, M., Lanzoni, G. 1990. *Lepiota*. Libreria editrice Biella Giovanna, Saronno.
- [27] Breitenbach, J., Kränzlin, F. 1995. *Fungi of Switzerland*. Volume 4. Verlag Mykologia: Luzern.
- [28] Jordan, M. 1995. *The Encyclopedia of Fungi of Britain and Europe*. David & Charles Book Co., Devon.
- [29] Lopez, A., Garcia, J. 2008. *Leucocoprinus cepastipes* Agaricaceae: Leucocoprineae. *Funga Veracruzana, mycodiversity of Veracruz State, México*.
- [30] Kuo, M. 2015. *Leucocoprinus cepastipes*. Retrieved from the MushroomExpert.Com Web site: [http://www.mushroomexpert.com/leucocoprinus\\_cepaestipes.html](http://www.mushroomexpert.com/leucocoprinus_cepaestipes.html) (2015, August).
- [31] Desjardin, D.E., Wood, M.G., Stevens, F.A. 2015. *California Mushrooms: The Comprehensive Identification Guide*. Timber Press: Portland.
- [32] Courtecuisse, R., Duhem, B. 1995. *Mushrooms & Toadstools of Britain & Europe*. Hyper Collins, London.