ISSN: 0976-3031

*Available Online at http://www.recentscientific.com*

*International Journal of Recent Scientific Research*
*Vol. 8, Issue, 1, pp. 15052-15054, January, 2017*

**International Journal of Recent Scientific Research**

**Research Article**

# STUDY OF A COPROPHILE ASCOMYCETE: CHEILYMENIA FIMICOLA (BAGL.) DENNIS (1978)

**Anas Nmichi*., Saifeddine EL Kholfy., Ahmed Ouabbou., Nadia Belahbib., Amina Ouazzani Touhami., Rachid Benkirane and Allal Douira**

Université Ibn Tofaïl, Faculté des Sciences, Laboratoire de Botanique, Biotechnologie et de Protection des Plantes, B.P. 133, Kenitra, Maroc

**ARTICLE INFO**

***Article History:***

Received 06th October, 2015
Received in revised form 14th November, 2016
Accepted 23rd December, 2016
Published online 28th January, 2017

***Key Words:***

Fungus, *Cheilymenia fimicola*, coprophilous, Dunes, Mehdia, Morocco.

**ABSTRACT**

Prospecting carried at the Mehdia sandy dunes have determined for the first time in Morocco a species belongs to the genus of *Cheilymenia*: *Cheilymenia fimicola* (Bagl.) Dennis (1978). In this study, the macroscopic and microscopic characters of this coprophilous fungus, have studied and illustrated.



## INTRODUCTION

The genus *Cheilymenia* Boudier (1885) belongs to the family ***Pyronemataceae*** (order: ***Pezizales***, subclass: ***Pezizomycetidae***, class: ***Pezizomycetes***, subdivision: ***Pezizomycotina***, division: ***Ascomycota***, reign of ***Fungi***) (Kirk *et al.,* 2008).

The genus *Cheilymenia* was erected by Boudier (1885) to include a number of species of Ascomycetes with operculum (Kanouse, 1948, Denison, 1964). It is represented by 66 species that have a wide distribution, especially in temperate regions (Kirk *et al.,* 2008). These species are very similar in appearance and habitats but their microscopic characteristics may be different (Buczacki and Stefan, 1992).

Most of the species belonging to the genus *Cheilymenia* are segregations of other genera, *Patella* sensu Seaver (1928), *Lachnea* sensu Svrçek (1948), *Scutellinia*, *Humaria*, *Peziza*, *Lasiobolus* and *Coprobia* comprising almost all species with small hairy apothecia (Larsen, 1980; Bell, 1983; Van Vooren & Moyne, 2010 and Jeannerot, 2011).

In Morocco, the genus *Cheilymenia* is little studied (Malençon & Bertault, 1961 and 1967). It is distinguished above all by its ever elliptic spores, which never have sporidioles, by its more cylindrical asci, less ample, by its paraphyses less frequently in a club, and colored most often at the base only (Boudier, 1885).

The receptacles of species of this genus are generally smaller, bordered by a membrane bearing only a few rarely visible and little colored hairs (Kanouse, 1948). The color of the hymenium is more often yellow, more rarely red or pale (Moravec, 1990). They are rather fimicole or saprophytic than terrestrial species (Denison, 1964; Jeannerot, 2011).

This group is composed of small species 0.3-12 mm in diameter that are usually overlooked due to their size, color and / or habitat (often wild animal excrement) (Moravec, 1990; Van Vooren, 2010 and Jeannerot, 2011).

The present work concerns a species of the genus *Cheilymenia* (*Cheilymenia fimicola* (Bagl.) Dennis (1978)) which is to be included in the fungal flora of Morocco.

## MATERIAL AND METHODS

Surveys, carried out in the dunes of Mehdia (January 2015) (North-West of Morocco), made it possible to meet a species of the genus *Cheilymenia* on dung. Specimens of this species were collected and brought back to the laboratory.

The macroscopic descriptions of the ascocarps concerned the morphological characteristics (form, color, size, aspect,...) as well as other peculiarities related to apothecia. This study is supplemented by a microscopic description of the spores and cuts at apothecia. The dimensions of ascospores, asci and

*Corresponding author: *Anas NMICHI*
*Université Ibn Tofaïl, Faculté des Sciences, Laboratoire de Botanique, Biotechnologie et de Protection des Plantes, B.P. 133, Kenitra, Maroc*

sometimes paraphyses are measured via a micrometer 10 × (18 mm) with a scale of 10 mm divided into 100 graduations (0.1 mm). Microscopic observations were made using an optical microscope (magnification × 400). The mounting liquid is tap water. The shape of the spores is obtained from the calculation of the quotient of Bas (1969) according to the following ratio, Q = length (L) / width (l).

Identification of the species was carried out by consulting the work of N'douba, (2013); Jeannerot, (2011); Van Vooren & Moyne, (2010) ; Kirk *et al.,* (2008) ; Moravec, (1990) and Malençon & Bertault (1961 and 1967).

## RESULTS

A single coprophilic species of the genus *Cheilymenia* has been described in this study:

***Patella coprinaria*** (Cooke) Seaver, (1928); ***Humaria coprinaria*** (Cooke) Kanouse, (1948) (Kirk *et al.,* 2008). Coprophile species harvested on 28-01-2015 on cow dung in the Mehdia' dunes (Kenitra).

**The fructifications** (3 - 5 mm) are cylindrical in the form of crucibles and sessile.

**Hymenium** is yellow-orange in color. **The margin** is rolled up to undulate covered with hairs gathering to hair. **The flesh** is gelatinous and orange in color.

**Ascospores** (16 - 17 µm x 9 - 12 µm) are elliptic, smooth and hyaline thin-walled. **The asci** are octospores (8 ascospores), cylindrical, hyaline and with a more or less thick wall (150 - 183.15 µm x 13.32 - 14.31 µm). **The paraphyses** (170 - 183.15 µm x 6.66 - 8.32 µm) are cylindrical, thin and have a slightly swollen apex of 10 to 12 µm in diameter.

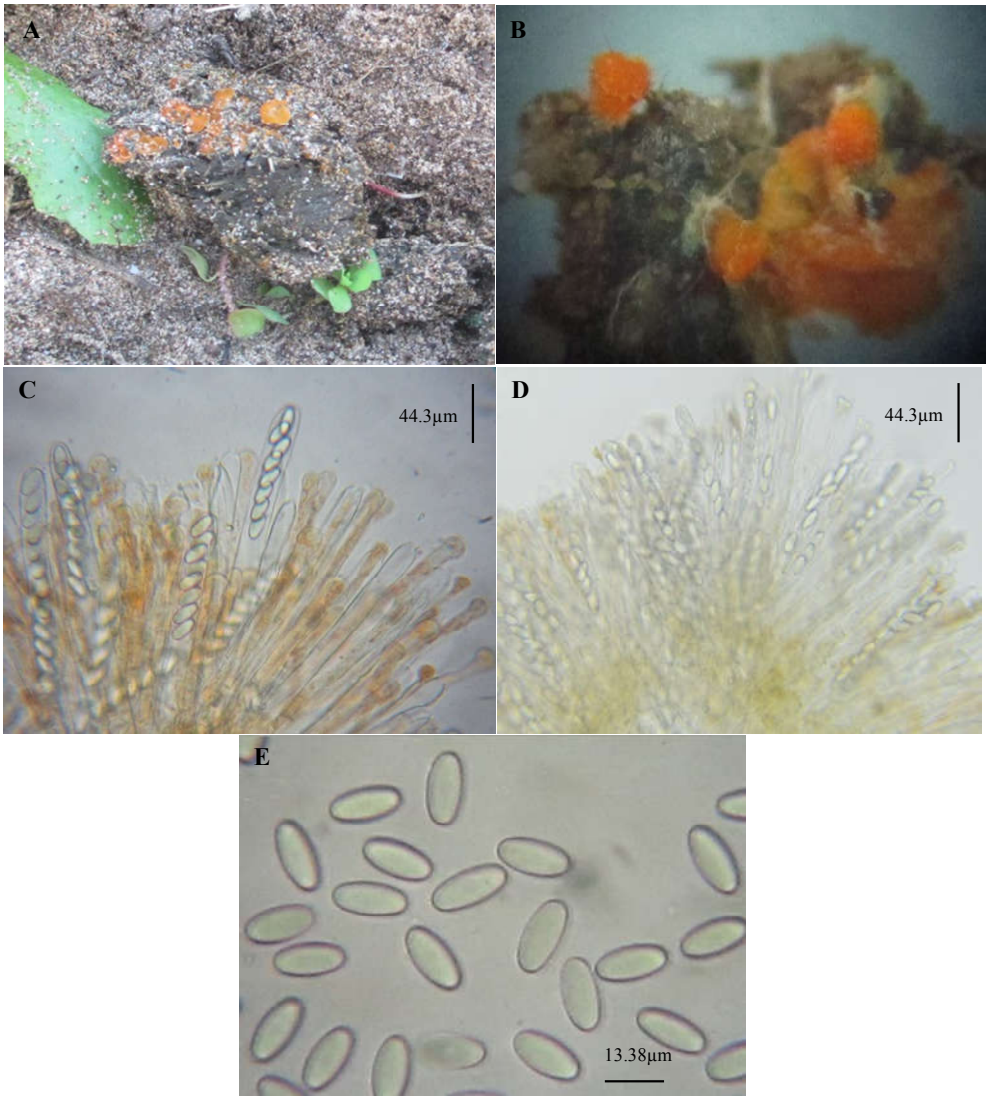


**Figure 1** Ascocarps (A et B), Paraphyses (C), asci (D) and Ascospores (E) of *Cheilymenia fimicola* (x 400).

***Cheilymenia fimicola*** (Bagl.) Dennis, (1978), syn ***Arrhenia fimicola*** Bagl., (1865); ***Peziza coprinaria*** Cooke, (1876); ***Sarcoscypha coprinaria*** (Cooke) Cooke, (1876); ***Lachnea coprinaria*** (Cooke) Sacc., (1889); ***Auriscalpium fimicola*** (Bagl.) Kuntze, (1898); ***Apus fimicola*** (Bagl.) Mussat, (1900); ***Cheilymenia coprinaria*** (Cooke) Boud., (1907); ***Cheilymenia coprinaria*** var. ***minima*** (Grove) Ramsb., (1914);

## DISCUSSION AND CONCLUSION

The genus *Cheilymenia* is divided into 8 sections (sect. *Paracheilymeniae* with series *Paracheilymeniae*, *Raripilosae* and *Glabrae*; sect. *Coprobia*; sect. *Striatisporae* with series *Striatisporae*, *Tenuistriatae* and *Albosetosae*; sect. *Villosae*; sect. *Obtusipilosae*; sect. *Micropilosae*; sect. *Cheilymenia* withseries *Cheilymenia*, *Insignes* and *Pallida*

*e*; sect. *Pseudoscutelliniae* with series *Pseudoscutelliniae* and *Coprinariae*.). Established on a complex of morphological characters such as the structure of apothecia, type of hair and the ornamentation of ascospores (Moravec, 1990).

In Morocco, the genus *Cheilymenia* Boudier (1885) is presented by 4 species which were only previously reported in the region of Tangier by Malençon and Bertault (1955-1969) (*Cheilymenia aurea* Boud., 1907) *Cheilymenia coprinaria* (Cooke) Boud., (1907), *Cheilymenia pulcherrima* (P. Crouan& H. Crouan) Boud., (1907), *Cheilymenia stercorea* (Pers.) Boud., (1907). These species have been cited in other bibliographic works (N'douba*et al*., 2011 and El kholfy *et al*., 2014).

According to Dennis, *Cheilymenia fimicola* was originally described as *Arrhenius granulata* in 1866 by Italian mycologists Giuseppe de Notaris (1805 - 1877) and Fransesco Baglietto (1826 - 1916). In 1978, she was transferred to the *Cheilymenia* genus by the British mycologist Richard William George Dennis (1910 - 2003) (Dennis, 1981). This coprophilic species is cosmopolitan which resembles *Cheilymenia stercorea*. These two species present sessile apothecia of small size and orange color, but with distinguished differences in the hairs. *Cheilymenia fimicola* is characterized by straight hair, septated, conical at one point, and branched at the base. In contrast, *Cheilymenia stercorea* has two types of hair, one straight, conical and septated like *Cheilymenia fimicola*, although the second is generally darker, shorter, starred, branched and is found mainly at the base of apothecia (Denison, 1964, Doveri, 2004 and Moravec, 2005).

In addition, other species have orange apothecia such as *Coprobia granulata* and *Scutellinia scutellata*. The first species, coprophilic, grows on manure and has no marginal hairs, while *Scutellinia scutellata* has visible marginal hairs, but develops on rotten woods (Breitenbach and Kränzlin, 1984; Beug *et al.,* 2014 and Desjardin *et al.,* 2015).

*Cheilymenia fimicola* (Bagl.) Dennis, (1978), collected for the first time in the sandy dunes of Mehdia (North-West of Morocco), has never previously reported in Morocco. Consequently, this species may be considered new for the fungal flora of Morocco.

## References


N'Douba A P, Ouazzani Touhami A, Benkirane R, Zidane L & Douira A., 2013. Inventaire des champignons coprophiles du Maroc. *Journal of Animal & Plant Sciences*, 16(3): 2374-2387.

Bas C., 1969. Morphology and subdivision of *Amanita* and a monograph on its section *Lepidella*, Persoonia, 5 (4): 285-579.

Bell A., 1983. Dung Fungi. An Illustrated Guide to Coprophilous Fungi in New Zealand. Victoria University Press, Private Bag Wellington, 88 pp.

Beug, M.W., Bessette, A.E. & Bessette, A.R. 2014. Ascomycete Fungi of North America. University of Texas Press: Austin, TX., 488 p.

Boudier E., 1885. Nouvelle classification naturelle des Discomycètes charnus Connus généralement sous le nom de Pezizes. Bull. Soc. Myc. Fr., 1: 91-120.

Breitenbach, J. & Kränzlin, F. (1984). Fungi of Switzerland. Volume 1: Ascomycetes. Verlag Mykologia: Luzern, Switzerland, 310 p.

Denison W. C., 1964. The Genus *Cheilymenia* in North America. Mycologia, 56(5): 718-737.

Dennis R.W.G., 1981. British Ascomycetes; Lubrecht & Cramer; ISBN: 3768205525.

Desjardin D.E., Wood, M.G. & Stevens, F.A., 2015. California Mushrooms: The Comprehensive Identification Guide. Timber Press: Portland, OR., 560 p.

Doveri F., 2004. Fungi Fimicoli Italici. Associazione Micologica Bresadola: Trento, Italy, 1104 p.

El Kholfy S., Outcoumit A., Ouazzani Touhami A., Belahbib N., Benkirane R. & Douira A., 2014. Bibliographic Inventory of Tangier fungi: Ctalogue of the Ascomycetes fungal flora. International Journal of Plant, Animal and Environmental Sciences (IJPAES), 4(3): 77- 92.

Jeannerot B., 2011. Sur deux récoltes de *Scutellinia macrospora* effectuées par Henry Dissing. Ascomycete.org., 2 (4) : 23-26.

Kanouse B. B., 1948. A survey of the Discomycete flora of the Olympic National Park and adjacent areas. Mycologia, 39: 635 - 689.

Kirk P.M., Cannon P.F., Minter D.W., Stalpers J.A,. 2008. Dictionary of the Fungi. 10th edn. CABI, Wallingford, UK.

Larsen H., 1980. Key to the genera of the operculate cup-fungi (Pezizales) of the Pacific Northwest and Rocky Mountain Region. published by the author H.J. Larsen, Pacific Northwest Key Council, pp. 1- 41.

Malençon G. et Bertault R., 1961a. Champignons du Rif. 7ème liste. C. R. Soc. Sci. Nat. Et Phys., Maroc, 27: 23-25.

Malençon G. et Bertault R., 1961b. Champignons du Rif. 8ème liste. C. R. Soc. Sci. Nat. Et Phys., Maroc, 27: 141-145.

Malençon G. et Bertault R., 1967. Champignons du Maroc. (Champignons de la région de Tanger: 8ème liste de Tanger). Bulletin de la Société des Sciences Naturelles et Physiques du Maroc, 47: 237-282.

Moravec J., 1990. Taxonomic Revision of the genus *Cheilymenia*. A new generic and infrageneric classification of *Cheilymenia* in a new emendation. Mycotaxon, 38: 459-484.

Moravec J., 2005. A world monograph of the genus *Cheilymenia* (Discomycetes, Pezizales, Pyronemataceae). Libri Botanici. IHW-Verlag, Eching., 21: 251-256.

Moravec J., 2006. Note on the excipular structure of *Cheilymenia theleboloides* (Discomycetes, Pezizales, Pyronemataceae). Czech. Mycol., 58 (1–2): 149–151.

Van Vooren N. & Moyne G., 2010. Un taxon rare et méconnu: *Humaria solsequia* (Quel.) comb. nov. (Pezizales), nom correct d'*H. aurantia*. Bulletin mycologique et botanique Dauphiné-Savoie .197 (47): 43- 49.

Van Vooren N., 2010. Inventaire des Ascomycota du parc national du Mercantour. Compte rendu de la première prospection. Ascomycete.org. 2 (3): 3-11.


*******