

***Copromyces bisporus*, A NEW RECORD FOR VENEZUELA**

***Copromyces bisporus*, un Nuevo Registro para Venezuela**

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ABSTRACT

On the basis, a study of coprophilous fungi from Zulia state, Venezuela, both a sordariaceous pyrenomycete with its verrucose spores and two-spored asci were isolated from rabbit and fox dung. The ascospores are uni or biserial, without fixed orientation respected to the germ pore; at first, they are hyaline, then ochraceous with a large globule, and finally dark brown, subglobose, furnished with short, broad, rounded warts and gelatinous equipment wanting. These features place the fungus in *Copromyces*, a genus characterized by nonstromatic, globose cleistothecia, usually aggregate, black, sparsely covered with hyaline, flexuous, septate hairs with indistinct paraphyses and irregularly clavate to cylindrical, short-stipitate, evanescent and unitunicate without apical ring asci. The species was identified as *Copromyces bisporus*, which represents a new record for Venezuela.

Key words: *Copromyces bisporus*, Sordariaceae, cleistothecia, Coprophilous fungi.

RESUMEN

Basado en un estudio continuo de hongos coprofílicos en el estado Zulia, Venezuela, un pirenomicetes sordariaceae con sus esporas verrugosas y dos esporas por asca, fue aislado de heces de conejo y zorro. Las ascosporas son uni o biserial, sin orientación fija con respecto al poro de germinación, al comienzo es hialina, después ocre con un glóbulo grande, y al final marrón oscuro, subgloboso, adornado con verruga corta, ancha y redondeada; y cubierta gelatinosa. Estas características colocan al hongo en *Copromyces*, un género caracterizado por presentar un cleistotecio no estromático, globoso, a veces en grupo, negro, escasamente cubierto con pelos hialinos, flexibles, septados con parafisis no distinguibles y de forma cilíndrica a clavada irregular, las ascas

son evanescentes y unitunicadas sin anillo apical. La especie fue identificada como *Copromyces bisporus*, el cual representa un nuevo registro para Venezuela.

Palabras clave: *Copromyces bisporus*, Sordariaceae, cleistotecio, hongos coprofílicos.

INTRODUCTION

Members of the Sordariaceae, is reported in previous studies of this family Pyrenomycetes [13] are considered to be saprofit and they are found predominately on dung the spore morphology is highly diversified both in regard to the ontogeny and mature stage. The ripe spores have most varied appearances concerning size, form, septation, number and position of the germ pores, and gelatinous equipment. Another important and conspicuous morphological feature in the spores is the structure of dark perispore. Most member of the family have smooth spores, although on ornamentation is no uncommon. Six genera with at least eighteen species are known to have spores with a ribbed, pitted or verrucose surface. The last mentioned type of sculpturing is very rare in the Sordariaceae [13, 14]. The unusual ascospores of this fungus consist of uni or biserial, at first, hyaline, the ochraceous with a large globule, and finally dark brown, subglobose, furnished with short, broad, rounded warts, often united to short, straight or curved, sometimes forked ridges gelatinous equipment wanting. These characteristics place it in *Copromyces* [1, 3, 4, 5, 13].

The genus *Copromyces* comprises only one species: *C. bisporus* Lundqvist. The objectives of this research were to identify and taxonomies classification of Coprophilous fungi in Zulia state, and to determinate the appearance of new species. In addition to keeping a collection of microscope slides which your have identified, a small herbarium can be extremely useful.

MATERIALS AND METHODS

Collection and incubation of the samples

During a study of coprophilous fungi in 17 municipalities of Zulia state, Venezuela, conducted from June 2000 to May 2001, were collected 180 animal dung samples to determine the appearance of coprophilous Fungi. The sample dung was proceeded of domestic and wild animal. Those were rabbit (*Sylvilagus sp.*) and fox (*Vulpes vulpex*). The sample dung that appeared to be relatively recent and unweathered were collected, intermittently of the period mentioned before, into clean receptacles and usually set to incubated within a day or four of collection. If samples could not be incubated shortly after collection the were gently air-dried stored in paper envelopes until incubation [15]. After 10-14 days yielded numerous perithecia.

Procedures for collection and inducing ascomal formations in the sample dungs were similar to those described by Bell, Cain, Delgado, Dennis, Lundqvist and Richardson.

In the laboratory each dung were placed in a moist chamber if the dung is very dry on collection it should be moistened. But if made to wet, fungal growth was inhibited at room temperature (22-24°C) [15].

The fruiting bodies were removed and mounted in water and studied with a light microscope. Measurements and drawings of the various structures were made. Attempts to obtain the fungus in pure culture were unsuccessful. The Venezuelan material has been accessioned in the herbarium of the Departamento Fitosanitario, Facultad de Agronomía, Universidad del Zulia, Maracaibo, Venezuela (HERZU).

RESULTS

During the study numerous cleistothecia of a Sordariaceae fungus were found growing on rabbit and fox dung. A description of this material is given below.

Copromyces bisporus Lundqvist

Ascoma a cleistothecia non-stromatic, 285-325 µm in diameter superficial, usually aggregate, globose, collapsing when dried, black, sparsely covered with hyaline to light-brown, flexuous, septate, 4-5 µm thick hairs, peridium brown, membranaceous. Asci 30-45 x 13-16 µm, irregularly clavate, short stipitate, evanescent that lack an apical ring mixed with large paraphyses, and certain one to three warty, dark ascospores 12-15 x 11-12 µm, uniseriate if more than two, without fixed orientation in respect to the germ pore, at first hyaline, then ochraceous with a large globule, and finally dark brown, subglobose, rounded warts; germ pore round 1.5 µm in diam. gelatinous equipment wanting, FIG. 1.

Isolated from rabbit and fox dung collected at La Villa del Rosario- Perijá county, Zulia state, Venezuela.

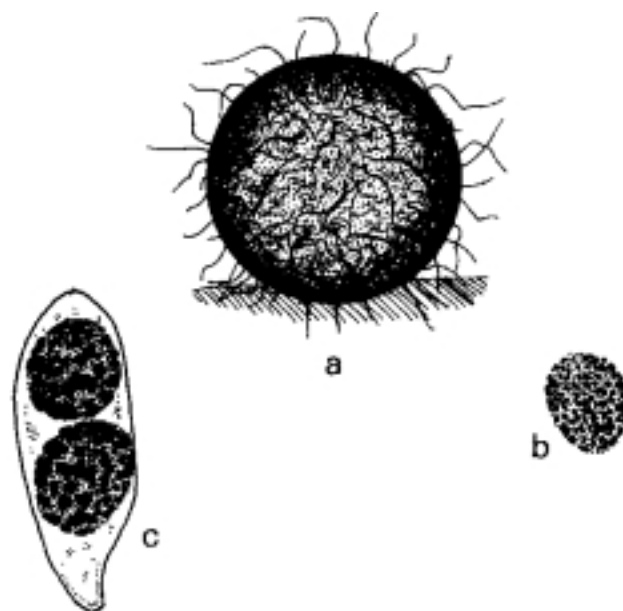


FIGURA 1. MORPHOLOGY OF *Copromyces bisporus*. a, EXTERIOR OF CLEISTOTHECIUM. b, MATURE ASCOSPORE. c, MATURE ASCI WITH ASCOSPORES.

DISCUSSION

As with most coprophilous Ascomycetes, the biology of *Copromyces bisporus* is poorly understood, Lundqvist. State that the fungus seems to belong mainly to warm temperature and subtropical regions. However, it was been reported from Sweden [13] and now in Venezuela. This represents the first report of *C. bisporus* in Venezuela. It appears to occur preferentially on dung domesticated such as the rabbit and wild animal as the fox.

Based on this observations, cleistothelial development takes 12-14 days [6, 7, 9, 10]. Contrasting with the 14-18 days in moist chamber indicated by Lundqvist. Such variations may reflect differences in the age and conditions of the materials sampled. The delicate asci in *Copromyces* probably dissolve at maturity as in the habit in most cleistothelial ascomycetes. In living specimen mounted in water the ascus wall is constantly visible, but not on dried material in from this medium and with lactophenol the asci can hardly be observed. This genus has a superficial resemblance to a plectomycete of the orden Eutoriales because of its cleistothecia is small, short, evanescent asci. However, its fascicled asci, the presence of interascal cells "Paraphyses" and the relative large dark brown spores makes it clear that the genus cannot belong to this group. The cleistothecia is them here of a limited, taxonomic significance. Many of the species and genera erroneously considered as belonging to the Plectascales seems to have their closest relatives and ancestors among, the ostiolate Pyrenomycetes and Loculoascomycetes. There are thus in principle no obstacle for

placing *Copromyces* in a ostiolate Pyrenomycetes family, because of the

In accordance with its spore sculpturing, and type of peridium the genus is considered to be closely related to the ostiolate *Gelasinospora*, *Neurospora* and *Sphaeria rotula* Cooke and to be cleistocarpus *Anixiella* and *Diplogelasinospora* as well [3, 4, 5, 6]. Lundqvist made a comparison with *Sphaeria rotula*, and considered to be the closest relative of *Copromyces*. After comparison of the Venezuelan material with species described by others [13, 14] it was identified as *C. bisporus*. This represents the first report of a species of *Copromyces* for Venezuela [6, 7, 9, 10].

CONCLUSIONS

A new genus for Venezuela, *Copromyces*, with its species *C. bisporus*, is described here, in accordance with this study. The presents authors have in several cases found cleistocarpy to be reliable as a generic character only, and *Copromyces* is for this and other reasons placed in the Sordariaceae. Because of its spore sculpturing, lack of paraphysis, and type of peridium the genus is considered to be closely related to the ostiolate *Gelasinospora*, *Neurospora* and *Sphaeria rotula* Cooke. And to the cleistocarpus *Anixiella* and *Diplogelasinospora* as well.

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