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MARINE FUNGI FROM THE DOMINICAN REPUBLIC: PRELIMINARY LIST

Biological Science

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ABSTRACT

A preliminary inventory of marine fungi was conducted on beaches and mangrove areas of the Dominican Republic. In this study a total of 25 species of marine fungi (16 ascomycetes and 9 anamorphic fungi) were reported, which constitute new records for the Dominican Republic. The specimens were deposited as permanent slides constituting the first collection of marine fungi of the island La Española.

KEYWORDS

Marine fungi, Ascomycota, Anamorphic fungi, Dominican Republic, La Española.

INTRODUCTION

The fungi, despite their importance and high number have been little studied. Hawksworth (1991, 2001) and Blackwell (2011) estimate that there should be approximately 1.5 to 5.1 million species in the world. However, Hawksworth (2012) in a more recent calculation places this figure at about 3 million fungi, of which only about 100,000 are known (Kirk *et al*., 2008), which represents 3.3% of the estimated total. In relation to the superior marine fungi, worldwide, the number of species described exceeds the figure of 549 species and includes an estimated 1500 species, excluding those that form lichens (Hyde *et al*., 1998, Jones *et al*., 2009 Jones, 2011). Most of the known fungal species correspond to temperate regions of the northern hemisphere. In general, the fungi of the tropics remain poorly documented, especially in Africa and South America. Minter *et al*., (2001) compiled information on fungal species in the Caribbean region. In his study he published a total of 11,268 species of mushrooms for the Bahamas, Antilles, Venezuela, Colombia and Honduras. Few research projects have tried to quantify the diversity of fungi in the Dominican Republic and none have focused on marine fungi. The objective of this study was to inventory for the first time the diversity of marine fungi presents in some sandy beaches of the Dominican Republic.

MATERIALS AND METHODS

Samplings were conducted in mangrove areas and on beaches along the intertidal zone during low tide, a variety of decomposing plant substrates, driftwood, phanerogams and humid sand were collected from nine Dominican beaches in the provinces from: La Altagracia, Barahona, Puerto Plata, Samaná, Hato Mayor and María Trinidad Sánchez. Samples were taken between August 2015 and February 2017. For both ecosystems, the samples were placed in sterile plastic bags, hermetically sealed and transferred to the laboratory where they were incubated at room temperature for a period of 2-8 months. The fungi were examined in the natural substrate and then preserved by permanent microscopic preparations according to the double coverslip method (Volkmann-Kohlmeyer & Kohlmeyer, 1996). The taxonomic identification of the species was carried out using the keys of Kohlmeyer & Volkmann-Kohlmeyer (1991); Hyde & Sarma (2000), Jones *et al*., (2009, 2015). The specimens were deposited as permanent preparations in the Mushroom Collection of the Dominican Society of Mycology.

RESULTS AND DISCUSSION

A total of 25 species of marine fungi were recorded from nine beaches. This number of taxa included 16 ascomycetes and 9 anamorphic fungi, all of which are new records for the Dominican Republic.

Most of the marine fungi found in this study belong to the Ascomycota division (64%). These results coincide with previous research reports in different geographical regions in Cuba (González *et al*., 2003, Samón-Legrá & Enríquez, 2010, Samón-Legrá *et al*., 2014), Mexico (González *et al*., 1998, 2001); India (Sarma & Vittal, 2001; Gayatri *et al*., 2009) and Malaysia (Alias & Jones, 2000, 2009) where they obtain the same proportion of taxonomic groups, which corroborates the dominance of ascomycetes in the marine environment (Kohlmeyer & Kohlmeyer, 1979).

Corollospora maritima, *Lindra thalassiae* and *Arenariomyces parvulus* are the most frequent and widely distributed species in the Dominican Republic, some of these species have also been reported as very frequent in several studies in the Caribbean region as in Cuba (Enríquez, 2004), Mexico (Gonzalez *et al*., 1998, 2001) and Puerto Rico (Kohlmeyer & Volkman-Kohlmeyer, 1987). In general, the study indicates that the marine fungi of Hispaniola Island do not differ significantly from those registered in other tropical and Caribbean regions. However, the diversity of marine fungi in this country is largely unknown. This study in the Dominican Republic marks the beginning of research on marine fungi in coastal ecosystems. Therefore, it is necessary to continue research on this group of fungi, to contribute to the knowledge and conservation of the marine fungal diversity of the island, as well as to establish the bases to explore other areas such as physiology, biochemistry, genomics and biotechnology.

Table 1 Preliminary list of marine fungi of the Dominican Republic.

Ascomycota

Antennospora quadricornuta (Cribb & J.W. Cribb) T.W. Johnson
Arenariomyces parvulus Jørg. Koch
Arenariomyces trifurcatus Höhnk
Corollospora colossus Nakagiri & Tokura
Corollospora gracilis Nakagiri & Tokura
Corollospora intermedia E.B.G. Jones
Corollospora maritima Werderm.
Corollospora pseudopulchella Nakagiri & Tokura
Corollospora pulchella Kohlm., I. Schmidt & N.B. Nair
Haiyanga salina (Meyers) K.L. Pang & E.B.G. Jones
Iwilsoniella rotunda E.B.G. Jones
Leptosphaeria avicenniae Kohlm. & E. Kohlm.
Lignincola tropica Kohlm.
Lindra thalassiae Orpurt, Meyers, Boral & Simms
Savoryella lignicola E.B.G. Jones & R.A. Eaton
Torpedospora radiata Meyers

Anamorphic fungi

Clavatospora bulbosa (Anastasiou) Nakagiri & Tubaki
Cumulospora marina I. Schmidt
Dendryphiella arenaria Nicot

Hydea pigmea (Kohlm.) K.L. Pang & E.B.G. Jones
Matsusporium tropicale (Kohlm.) E.B.G. Jones & K.L. Pang
Trichocladium alopallonellum (Meyers & R.T. Moore) Kohlm. & Volkm.-Kohlm.
Varicosporina ramulosa Meyers & Kohlm.
Xylomyces rhizophorae Kohlm. & Volkm.-Kohlm.
Zalerion maritima (Linder) Anastasiou

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