KAVAKA 54:100-102 (2020)

A new host record for *Dictyoarthrinium sacchari* (J.A. Stev.) Damon

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(Submitted on April 8, 2020; Accepted on June 2, 2020)

ABSTRACT

While investigating the mycological diversity of Sagar district of Central India, an interesting litter hyphomycetous fungus was recorded and studied, which have its association with leaves of *Cymbopogon citrates* (DC.) Stapf. The symptomatology, macroscopic and microscopic features of the present collection are in conformity with the diagnostic characters of *Dictyoarthrinium sacchari* (J.A. Stev.) Damon. It is also noteworthy that this fungal species has never been earlier reported on this host. Hence this constitutes a new host record for *Dictyoarthrinium sacchari*.

Key words:- Hyphomycetous fungi, *Dictyoarthrinium* central India, leaf litter

INTRODUCTION

The forest floor constitutes a heterogenous group of plant remnants such as coarse fine deadwood, fallen twigs, leaves, needles, etc. These remnants form the important part of dead organic matter (Didion *et al*., 2014). There is great diversity and dynamic aggregation of litter decomposing fungi occurring in association with the forest floor. These fungi play important role in the structural stability, nutrient availability, productivity and other critical factors of ecosystem functioning (Alanbagi *et al*., 2019). The freshly fallen leaves form a favorable substrate for the growth and establishment of these fungi. The presence of fungal mycelia form the basis for different types of ecological interactions with bacteria and invertebrates (Boddy *et al*., 2007, Hardoim *et al*., 2015; Prakash *et al*., 2015). Fungal communities show a clear succession in response to the availability of different types of substrate to be decomposed (Fukasawa *et al*., 2009; Purahong *et al*., 2016; Voříšková and Baldrian, 2013). During the surveys conducted in Sagar district of Madhya Pradesh an interesting fungus was found growing in association with the dead leaves of *Cymbopogon citratus* (DC.) Stapf. Based on the phenotypic characters it was identified as *Dictyoarthrinium sacchari* (J.A. Stev.) Damon with *Cymbopogon citratus* as a new host record (Damon, 1953).

MATERIAL AND METHODS

Collection of infected leaves was carried out and meanwhile they were taken to the laboratory for slide preparation using lactophenol cotton blue as a mounting medium. For the detailed study of morphology, light microscopy was utilized. 400X magnification was taken in application in order to determine the micrometry of mycelium, conidiophores, and conidia (30 each). However, for purpose of determining exact measurement and detailed morphology of fungus Scanning Electron Microscope was used. Since it was a dried collection, sample was not given preparative treatment for SEM observation (Piñar *et al*., 2015). Instead sample was coated with thin layer of gold-palladium using Denton Vacuum and observed using Nova Nano SEM 450. The fungal specimen was submitted to Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute Pune, India and another specimen deposited in mycological herbarium (RSM), Department of Botany, Dr. Harisingh Gour University Sagar M. P. India.

TAXONOMIC DETAILS

Dictyoarthrinium sacchari (J.A. Stev.) Damon, Notes on the hyphomycetous genera, *Spegazzinia* Sacc. and *Isthmospora* Stevens. *Bulletin of the Torrey Botanical Club* **80** (3): 155-165, 1953. **Figs. 1-2**

= *Tetracoccosporium sacchari* Stevenson Johnston, J. R. and Stevenson J. A., 1917. Sugar-cane fungi and diseases of Porto Rico. *Dept. Agric. Porto Rico* **1**(4): 177-264.

Colony effused irregularly spreading on the substratum, black. Mycelium superficial forming a network on host

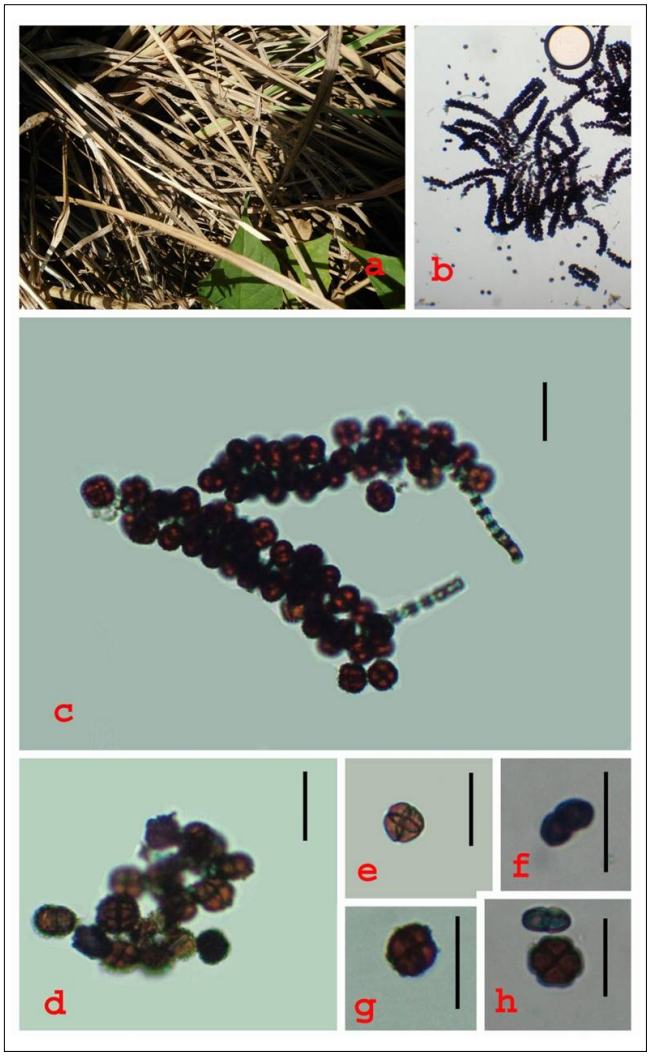

Fig. 1. ***Dictyoarthrinium sacchari*** a. Symptom. b-c. Conidia with conidiophores at 100X and 400X, respectively. d-h. Different view of conidia. Scale bar: c-h = 20µm

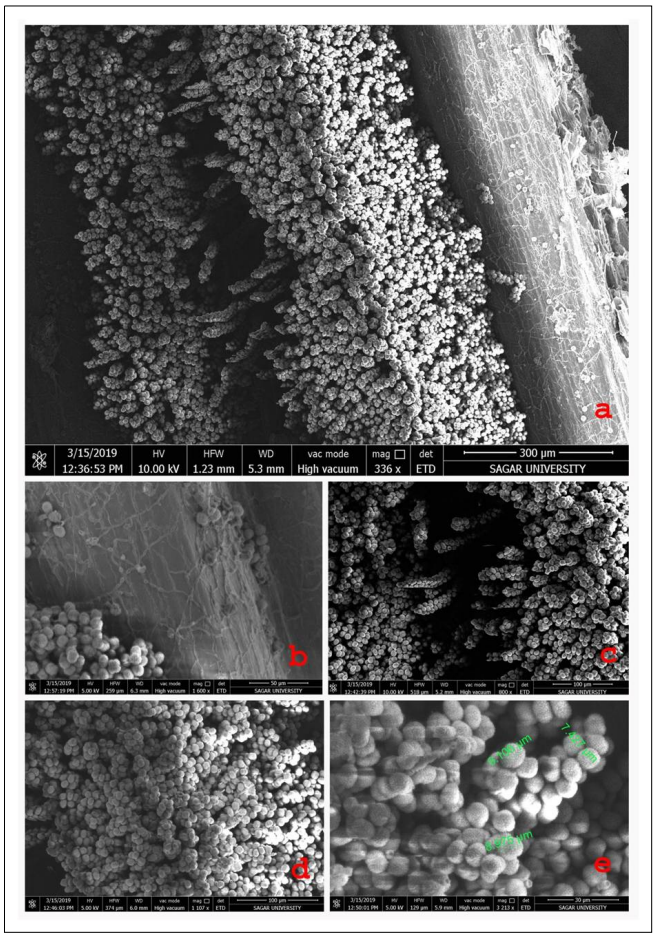

Fig.2. **Scanning electron microscopic (SEM) images of *Dictyoarthrinium sacchari*** : a. Fungus association with host. b. mycelium. c-e. Conidia in different magnification.

leaves, pale brown, hyphae 1.7-2.9 µm thick. Conidiophores erect, cylindrical, aggregated, hyaline, smooth, up to 165 x 4.5-5.0 µm. Conidiogenous cells forming dark bands on conidiophores. Conidia originate from lateral or apical part of conidiophores, dark brown, verrucose, thick walled, 4 celled, cruciately septate, initially 1-2 celled, oval, hyaline or pale brown, smooth, 7.2-9.5 µm in size.

Specimen examined: Madhya Pradesh, Sagar, Dr. H. S. Gour Central University Sagar, Botanical Garden, on dead leaves of *Cymbopogon citratus*, Feb. 2018 leg. S. Bhardwaj, (AMH10046, RSM31).

DISCUSSION

The present specimen resembles with the earlier description of *D. sacchari*. The review of literature revealed that *D. sacchari* is earlier reported in association with various hosts i.e. *Triticum* sp. (Nair and Tyagi, 1961), *Musa paradisiaca* (Matsushima, 1971), *Saccharum officinarum* (Stevenson, 1975), *Cosmos bipinnatus* (Srivastava and Gupta, 1981), *Lithachne pauciflora* (Mercado, 1984.), *Prunus amygdalus* (Gene *et al*.,1990), *Delonix elata* (Pandey and Rao ,1998), *Musa acuminata* (Photita *et al*., 2003), *Neolitsea scrobiculata* (Saravanan and Vittal, 2007), *Persea mechrantha* (Saravanan and Vittal, 2007) *Saccharum spontaneum* (Bhilabutra *et al*., 2010) and *Pinus wallichiana* (Prasher and Singh, 2015). The present report on *Cymbopogon citratus* is a new host record for *D. sacchari*.

ACKNOWLEDGEMENTS

Authors are thankful to the Curator, Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute Pune for accepting the fungal specimen and providing the accession number. Authors are also thankful to Head, Department of Botany, Dr. Hari Singh Gour University Sagar M.P., for providing laboratory facilities. The first author is thankful to University Grants Commission, New Delhi for financial assistance.

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