

Short communication:

Microfungal diversity on leaves of *Eusideroxylon zwageri*, a threatened plant species in Sarawak, Northern Borneo

A. LATEEF ADEBOLA^{1,2,✉}, MUID SEPIAH¹, MOHAMAD H. BOLHASSAN¹, MANSOR WAN ZAMIR¹

¹ Department of Plant Science and Environmental Ecology, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan-94300, Sarawak, Malaysia. Tel./fax.: +60-146902928, ✉email: lateef.aa@unilorin.edu.ng

² Department of Plant Biology, Faculty of Life Science, University of Ilorin, Nigeria

Manuscript received: 16 August 2015. Revision accepted: 27 September 2015.

Abstract. Adebola AL, Sepiah M, Bolhassan MH, Wan Zamir M. 2015. Microfungal diversity on leaves of *Eusideroxylon zwageri*, a threatened plant species in Sarawak, Northern Borneo. *Biodiversitas* 16: 264-268. A survey of the microfungal communities on green leaves and leaf litters of an endangered plant species, *Eusideroxylon zwageri* Teijsm. & Binn. (belian) was carried out for the first time. A total of 200 leaf segments were plated on both water agar and malt extract agar. 74 fungal species were identified from both leaf types with more fungal taxa found on the green leaves, with a Shannon diversity index of 3.85 compared to that on litters, 2.63 and the similarity between the microfungal communities on both leaf types was low with a Bray-Curtis similarity index of 0.366. The most dominant species on both leaf types includes *Aphanocladium areanarum*, *Trichoderma koningii*, *Nectria* sp., *Chalara pteridina*, *Hyphomycetes* sp.3, hyaline *Mycelia sterilia*, *Circinotrichum* sp., *Phoma* sp., *Acremonium macroclavatum*, *Chaetopsina* sp., *Physarum* sp., *Beltrania rhombica* and *Colletotrichum acutatum*.

Keywords: Endophytic, green leaves, leaf litters, new record, saprophytic

INTRODUCTION

General knowledge on the microfungal diversity and distribution is still inadequately understood. More studies have been done on fungal diversity and their spatial distribution in the temperate regions as compared to the tropics (Hawksworth 2001; Hawksworth and Rossman 1997). Many areas and substrates still remain unstudied in the world, most especially in the tropics and same applies to many plant species which are not yet studied for their associated microfungal communities. The most accepted fungal estimate of 1.5 million by Hawksworth (1991, 2001) was considered as too small by some authors (Cannon 1997; O'Brien et al. 2005) on the basis that the used plant to fungus ratio of 1: 6 used by Hawksworth, which assumed the plant diversity as 270,000, was too low, pointing out that there are about 300,000-320,000 plant species (Prance et al. 2000), 420,000 spp. (Govaerts 2001) and 117,734-575,320 spp. (Wortley and Scotland 2004). An important area of global fungal diversity which has been often overlooked is microfungi on vulnerable, threatened and endangered plant species. There is a wide gap of data on microfungi associated with many rare plant species, in terms of host-specific fungi and also fungal disease caused to the plants (Buchanan et al. 2002).

Eusideroxylon zwageri Teijsm. & Binn. (belian tree), is a typical case study of unstudied rare plants. *E. zwageri* is the only accepted species in the genus *Eusideroxylon* which belongs to the family Lauraceae. This plant species, also called the Borneo Ironwood, is native to the Southeast

Asian forest and has been listed in the IUCN Global Red List of Threatened Species as an endangered species due to over logging and habitat destruction (IUCN 1998). To the best of our knowledge, no studies have been found in literature on microfungal communities on belian tree. At the plant family level (Lauraceae), comparatively few studies have been done on plant species belonging to the family Lauraceae, an example is the study done by (Paulus et al. 2006) on *Cryptocarya mackinnoniana* from which 81 fungal taxa were identified using direct observation method and on *Chlorocardium rodiei* by Cannon and Simmons (2002) in which only 10 endophytic fungi were identified.

This study aims at revealing the microfungal communities on green leaves and leaf litters of *E. zwageri* (belian tree) from Kubah National Park in Sarawak, Malaysia. The implications of this study will be far reaching in the understanding, protection and conservation of the belian tree.

MATERIALS AND METHODS

Sampling

Green leaves and leaf litters were collected in March, 2014 from under a belian tree (N 01°36'760, E 110°11'794), 127 m above sea level, at the base of the camp in Kubah National Park in Sarawak, Malaysia. In this Park, this is the only known location of belian tree and this area has a very rough terrain. Coupled with this, collection of belian samples is restricted by the Park officials. Leaf