

# ARBORISPORA VARIABLE- A NEW SPECIES FROM OAK LEAF LITTER FROM NAINITAL HIMALAYA

P. Maiti\*<sup>1</sup>, M. Nand<sup>2</sup>, D. Kamil<sup>3</sup>, R.C. Gupta<sup>4</sup>

<sup>1,2,4</sup>Department of Botany, Kumaun University, SSJ Campus, Almora, Uttarakhand, India

<sup>3</sup>Division of Plant Pathology, IARI, New Delhi, India

\* Correspondence: priyankamaiti.06@gmail.com

## ABSTRACT

In present work the mycobiota present in decomposing *Quercus floribunda* leaf litter from Nainital region of Central Himalayan, India was examined by applying simple and quick cellotape technique. A new species of *Arborispora* was identified with spectacular variations on the conidia and described as *Arborispora variabile* and compared with other related species of the genus.

**Keywords:** *Arborispora variabile*, Cellotape technique, New species, *Quercus floribunda*.

## INTRODUCTION

The Indian Himalayan region is well known as the powerhouse of diverse flora and fauna. The Himalayan region that lies in Nainital district of Uttarakhand is a part of Central Himalaya. The height of the area is 2000-2300m above mean sea level and lies between 29° 19'-29° 28' N latitude and 79° 22'-79° 38' E longitude. Some dominating oak species found in this area includes *Quercus leucotrichophora*, *Quercus floribunda*, *Quercus semecarpifolia* (Kharkwal *et al.*, 2009). Forest areas covered by oak leaf litter are an extensive dwelling place for wide range of algae, bacteria, rotifers, platyhelminths, protozoans, nematodes, crustaceans, insects and other organisms (Maguire 1971). Out of 1.5 million of fungi, only 50% have been characterized until now. Unfortunately, only about 5% of fungi can be cultured artificially. Only a fraction of fungal wealth has been subjected to scientific scrutiny and mycologists should unravel the unexplored and hidden wealth (Manoharachary *et al.*, 2005). During present work, the mycobiota present in decomposing *Quercus floribunda* leaf litter from Nainital was examined by applying simple and quick cellotape technique (Gupta 2016). During this investigation, a new species of *Arborispora* was identified as *Arborispora variabile*. The specimen has been deposited under HCIO-No. 52004 in herbarium cryptogamae India orientalis (HCIO) maintained by Indian council of agricultural research (ICAR), New Delhi. *Arborispora* species was previously reported from terrestrial forest litter in Hungary with the name *Magdalaena monogramma* Arnaud (Goonczl *et al.*, 2003). In another study, *Arborispora*

*dolichovirga* K. Ando was also reported from Canada and they suggested that the earlier name for this species is probably *Magdalaena monogramma* (Marvanova *et al.*, 2001). The genus is also reported from streams of Northwest Portugal (Pascoal *et al.*, 2005).

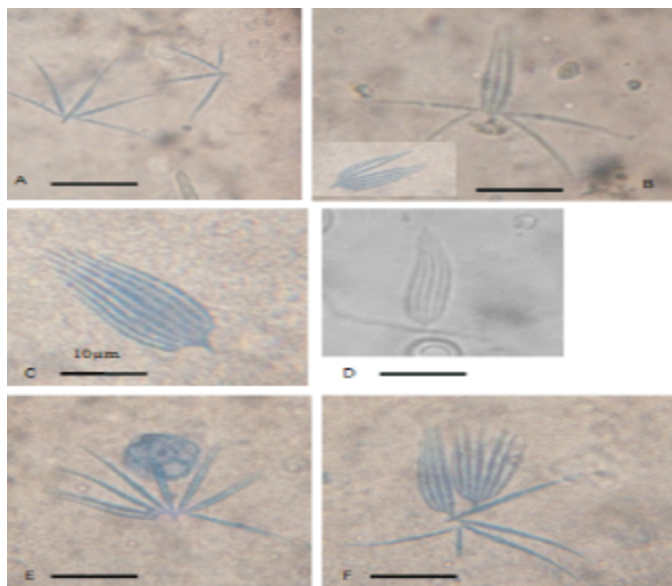
## MATERIALS AND METHODS

In present study a quick and simple technique by using cellotape was used. The advantage of this technique over the conventional techniques is that when the leaves are cultured in the lab for fungus identification only fast growing fungi are able to grow and suppresses the growth of rare and slow growing fungi so they cannot be identified by this technique (Ilyas 2005). In this technique are and slow growing fungus can be identified as they are collected directly from their natural habitat. In this technique, a piece of adhesive cellotape (1.5 cm x 3 cm) was used from a common transparent adhesive cellotape roll. The micro-fungi present on the leaf litter was directly collected by pressing the cello tape on the decomposing *Quercus floribunda* leaf litter by the help of forceps and then placing it on a glass slide. The adhesiveness of the tape helps the micro-fungi growing on the decomposing leaf litter easily get adhere to the under-surface of the tape. After that, the staining process was done by a mixture of cotton-blue and lactophenol at the margin of the cellotape on the glass-slide by using a dropper. The dye mixture enters under the cellotape filling the space among the cellotape and the glass-slide, and the fungal structures such as mycelium, conidia and conidiophores etc. are stained

gradually. Finally, the micro-fungi present on the decomposing leaves was studied in a very short time under a microscope (Gupta 2016).

## RESULTS AND DISCUSSION

Spectacular variations on the conidia of this fungus were observed. That is why it is described as *Arborispora variabile*. According to Marvanova and Barlocher, 2001 the growth of conidia is usually difficult in artificial media which reflects the convenience of the cello tape technique as a result of which various types of conidia were identified in our study. In (Fig. 1a) conidia with four and five branches (7.5 µm -14µm) were observed whereas in (Fig. 1 b) seven (12.5 µm -15 µm), in (Fig. 1 c) eight (17.5 µm -22.5 µm) branches were observed. In (Fig. 1 d), the conidium (17.5 µm) was found to be attached with hypha of 20 µm length and 1 µm width. In case of (Fig. 1 e & f), eleven (12.5 µm -15 µm) and fourteen (14 µm -15 µm) branches of conidia were observed respectively. Previous reports of conidia from the same genus was mentioned by Gonczol *et al.*, in 2003 under the name *Magdalaena monogramma* Arnaud. The conidia with six branches were previously reported by Gonczol *et al.*, 2003 which matched that of ours. Conidiophores were not reported in the previous study of *Arborispora dolichovirga* K. Ando where as in our species conidiophores were clearly identifiable. The proliferation of conidia was observed on the sides from the middle branches. Side conidia



**Fig.1.** *Arborispora variabile* sp. nov. (a) Conidia with four & five branches (b) With seven (c) With eight (d) A conidium on hypha (e) With eleven and (f) With fourteen branches isolated from oak leaf litter Scale=10µm

were observed having four to six branches. Conidia were fan-shaped, fusoid and septed. Fungus is an important element in nature which is known to colonize diversified habitat and multiply in nature. However, fungal taxonomists are dwindling day by day posing a threat for identification of the hidden fungal wealth (Manoharachary *et al.*, 2013).

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