

Identification of new Ascomycota fungi *Cordyceps* in Hilly areas of Tamilnadu

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Mushrooms are macrofungi with distinctive basidiomata or ascomata which can be either hypogeous or epigeous, large enough to be seen with the naked eye and to be picked up by hand. In 1990, the magnitude of fungal diversity was estimated to be a least 1.5 million species. Of the 1.5 million estimated fungi, 1,40,000 species produce fruiting bodies of sufficient size and suitable structure to be considered as macro fungi, which can be called “mushrooms”. Of these, about 7000 species are considered to possess varying degrees of edibility, and more than 3,000 species are regarded as prime edible mushrooms. To date, only 200 of them are experimentally grown, 100 species are economically cultivated, approximately 60 commercially cultivated and about 10 have reached at an industrial scale of production in many countries (Rajaratnam and Thiagarajan, 2012). As food the mushrooms are world-wide appreciated for their taste and flavour and are consumed both in fresh and processed form. They are poor in calories and rich in proteins, fibers, carbohydrates, and important vitamins such as thiamin, riboflavin, ascorbic acid and minerals (Manzi et al, 1999; Kues and Liu, 2000; Mattila et al, 2002; Firenzuoli et al. 2002 and Mishra and Singh, 2010). Medicinal mushrooms have a long history of use in traditional oriental therapies, and fungal metabolites are increasingly being used to treat a wide range of diseases (Lindequist et al 2005, and Guillamon et al., 2010). Moreover, edible mushrooms should not be considered simply as food, as some of them have been shown to be in bioactive compounds (Barros et al, 2007). Mushrooms contain many substances and several of them could have some biological activity. The long list includes polysaccharides, phenolics, proteins (fungal immunomodulating proteins—FIPs, lectins, glycoproteins and non-glycosylated proteins

and peptides), polysaccharide-protein complexes, lipid components (ergosterol), and terpenoids, alkaloids, small peptides and amino acids, nucleotides and nucleosides. This long list represents a great assortment of 93 biological properties which include antioxidant (Peralta et al, 2008; Puttaraju et al, 2006 and Ferreira et al., 2009), antitumor/anticancer (Moradali et al., 2007), antimicrobial (Bancs et al., 2007), immunomodulatory (Brochers et al, 2004), anti inflammatory (Pandihla et al, 2009 and Moro et al, 2012) and hypoglycaemic actions (Hu et al, 2006). In India the total recorded mushrooms are approximately 850 species (Deshmukh, 2004). Multiple benefits of *Cordyceps*, and only few reports of work on it from India, an attempt has been made to study various aspects of *Cordyceps militaris* available in Tamilnadu with

following objectives:

- To survey, collect and work out taxonomic details of *Cordyceps militaris* present in Tamilnadu higher elevated areas.
- Pure Culture isolation and conduction of study on physiological requirements of the fungus.
- To work out the antibacterial activity of *Cordyceps militaris* against two human pathogenic bacteria *S.aureus* and *E.coli*.
- Molecular characterisation of *Cordyceps militaris* available in Tamilnadu
- Determination of nutritive components of *Cordyceps militaris*.
- Optimization of growth conditions to produce mass inoculums in a fermenter for lab scale cultivation trials.

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