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Determine the Various Types of Fungi Found on Corpse - A Review

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ABSTRACT

This is the first overview to be published of the whole field of forensic mycology. It is based on all available information located in the literature. Information on fungi is given, and this is followed by an outline of the value, and potentially wide application, of mycology in criminal investigation. Applications include roles in providing trace evidence; estimating time since death (post-mortem interval); ascertaining time of deposition; investigating cause of death, hallucinations, or poisonings; locating buried corpses; and biological warfare. Previous work has been critically evaluated, with particular attention to its evidential value, and suitability for presentation in a court of law. The situations where mycology might assist an investigation are summarized, and issues relating to the further development of the subject are presented. A comprehensive bibliography with 120 citations is provided.

Keywords : Mycology, Fungi, Criminal Investigation, Postmortem, Poisoning.

I. INTRODUCTION

Mycology is the study of fungi. It includes fungi likes moulds, mushrooms, plant and human pathogens, slime-moulds, yeasts etc. The mycological evidence is used in criminal investigations and testing in the courts. The study of members of Kingdom Fungi is called as Mycology. Fungi are eukaryotic in nature. Also, it is unicellular as well as multi-cellular. They are heterotrophs. Mushrooms, Toadstools, Yeast, Penicillium are some of the commonly found Fungi. Fungi play a vital role in the process of decomposition. Most of the Fungi found are related to corpses. One such Fungus is Hebeloma syriense which has earned itself the title 'The corpse finder'. Mycology is the branch of biology that focuses on the study of fungi, which are diverse organisms with characteristics that distinguish them from plants, animals, and bacteria. Hyphae: Fungi are composed of thread-like structures called hyphae. These hyphae can form a network known as mycelium. Forensic Mycology includes fungi which can helps to determine the time of death, location etc. Here are some key points about forensic mycology:

Postmortem Interval: Fungi can help to determine the death time by studying the different types of fungi on corpse.

Mycotoxins: Some fungi produced toxic metabolites are known to be mycotoxin. It is the study of toxin material like poisoning substances, different types of toxic material and contamination in substances like food poisoning etc,

II. METHODS AND MATERIAL

1.Forensic mycology:

current perspective the use of fungal data in a broad spectrum of forensic situations. It will be evident that mycology is useful to the investigation of both criminal and civil case however, it will be necessary for investigating officers to become more aware of the possibilities provided by spores and whole fungi and to recognize situations where mycological evidence might provide critical evidence. In such cases, specialist advice should be sought. There is a need for those involved in all aspects of forensic medicine, to be aware of the evidential value of fungi, especially with respect to trace evidence, timing of events, and demonstrating psychotropic substances, and poisons (O.JASIM, 2021) . Determination of postmortem is one of the most updated subjects of forensic medicine. In recent years species of fungi colonies grown on cadavers, and duration of fungi have been tried to be determined postmortem intervals (David L Hawksworth, 2015)

2.Fungal growth on a corpse:

Though some species of fungi as penicillium and aspergillus are spread, colonization on cadaver at least 3-7 days (PETEKKAYA S, 2018). When the corpse of the victim living at home was found, development of decomposition signs, death incident should take place at least three days ago, decomposition signs, and testimonies gives investigation supported the time of death. (a) identifying fungal species on the corpse to detect the presence fungal consecutively ,(b) analysing fungal growth in diverse climate conditions , and, (c) performing further experimental studies concerning fungal growth rates (HOSUKLER, 2018), and patterns, presently forensic mycology may be adjunct to forensic entomology (Erdem Hösükler, 2018)

3.Forensic analysis of hallucinogens fungi and DNA metabarcoding of forensic mycological samples:

Forensic analysis of hallucinogenic fungi DNA-based approach. The comparative sequence approaches some samples are analysed from this which is said to be fungal samples. DNA based approach is used to determine the sequence of ITS-1 (Zhang, 2021) and unknown samples. DNA-metabarcoding is commonly used tool for data analysis. DNA metabarcoding can supports forensic discrimination in postmortem examination. DNA metabarcoding is a developing the identity of multiple species for mixed samples. (Nugent KG, 2004)

4.DNA Barcoding in forensic Mycology:

DNA barcoding is the method also used to determine the cause and time of death along with location of corpse. DNA barcoding has the potential to identify fungal species in various form. Species identification can be performing taxonomic methods as well as by using DNA barcoding. High throughput sequencing technology (HTS) (Bell, 2016) also improved identification capability of DNA barcoding in fungal species identification. Forensic barcoding is set to facilitate in identification method (spriha sharma, 2020)

III.RESULTS AND DISCUSSION

In this review paper some methods are used to determine the various types of fungi, which is found on cadaver or corpse. After the body decomposition which types of fungi are present on body, time duration of death and cause of death is observed in it. Different methods to identify samples present on

cadaver is studied in this paper. This paper helps to gain more information about Mycology and types of fungi.

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