

Trichosporon beigelii

THESIS

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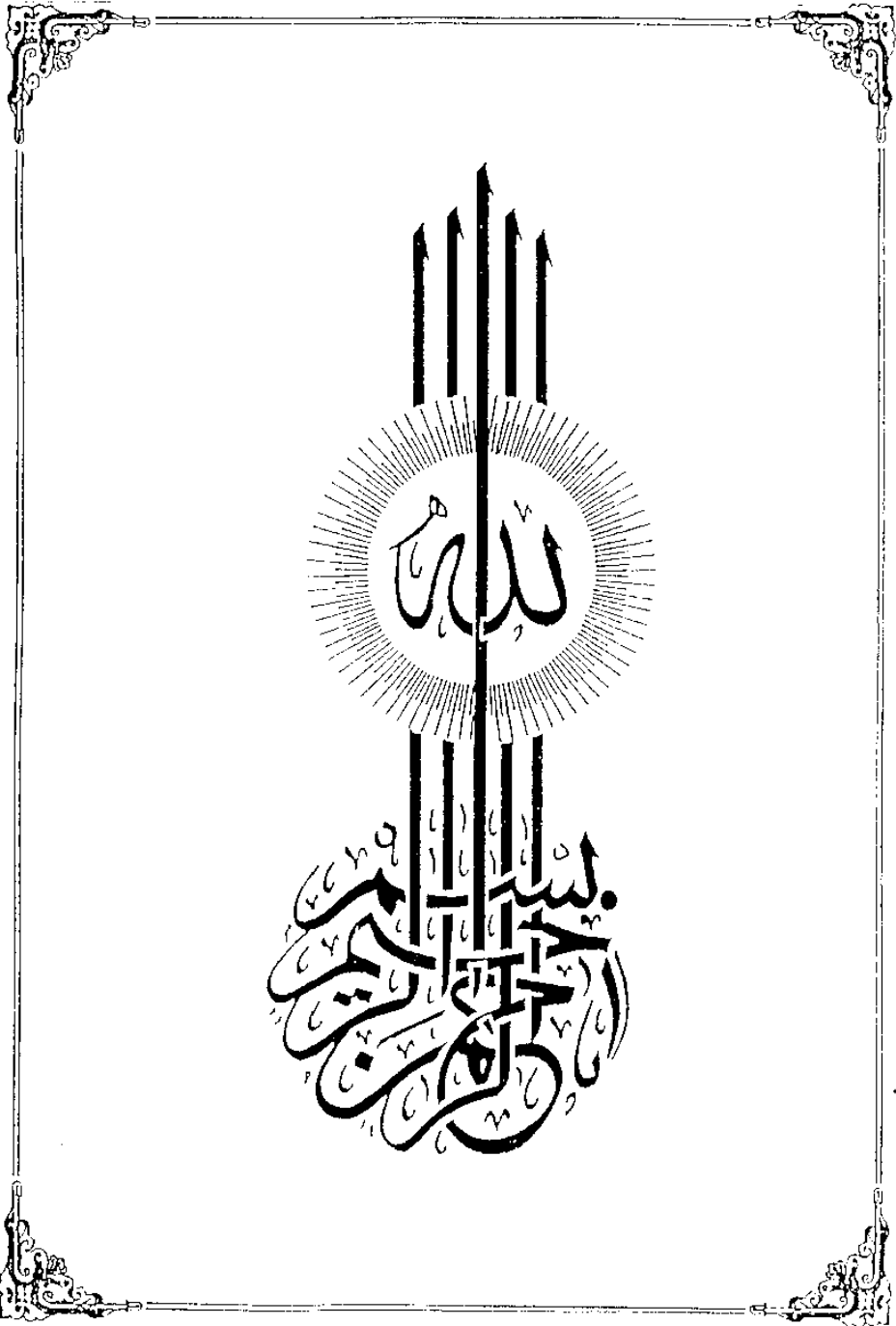
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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

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مستشار

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1 INTRODUCTION AND AIM OF THE WORK

1 Trichosporon beigelii

Trichosporon beigelii, formerly called Trichosporon cutaneum, is classified as a yeast-like fungus, a member of the subfamily Trichosporoideae in the family of Cryptococcaceae.⁽¹⁾

It is an imperfect on asexual fungus with certain features of the true yeasts. It shares with Cryptococcus, Pityrporon, Geotrichum and Candida the characteristics of being essentially unicellular, developing moist creamy colonies during early growth and being capable of producing systemic as well as cutaneous infection.⁽²⁾

It is widely distributed in nature being found in soil, stagnant and fresh water, and animal excreta. It may be a part of the normal human skin, among respiratory tract flora and can be also isolated from oropharyngeal secretions, urine and stool of healthy persons. So it was considered as a commensal rather than a pathogen.⁽¹⁾

It is of low pathogenicity and was previously thought to be the cause of a benign superficial hair infection - White piedra - only.⁽³⁾ In 1970, the first reported case with invasive infection caused by Trichosporon beigelii was a brain abscess.⁽⁴⁾ Since then, this

fungus has been recognized as the causative agent of fatal disseminated infection in immunocompromised host.⁽⁵⁾

Trichosporon beigelii was found to be the cause of many clinical disorders such as; Trichosporon beigelii endocarditis complicating prosthetic heart valves,⁽⁶⁾ postoperative endophthalmitis,⁽⁷⁾ peritonitis in patients under continuous peritoneal dialysis,⁽⁸⁾ hepatitis,⁽⁹⁾ and hypersensitivity pneumonitis in Japan.⁽¹⁰⁾ However, it was found that the most serious form of infection is disseminated trichosporonosis.⁽¹¹⁾

The aim of the present work is to review the literature concerning the different conditions caused by Trichosporon beigelii with special emphasis upon cutaneous infection.

2 WHAT ARE FUNGI ? (FEW IMPORTANT POINTS)

- 2.1 GENERAL CHARACTERISTICS
- 2.2 SOMATIC STRUCTURES
- 2.3 REPRODUCTION
- 2.4 THE YEASTS
- 2.5 CLASSIFICATION AND NOMENCLATURE

2 What Are Fungi ?

2.1 General Characteristics

At present, biologists use the term fungus to include eukaryotic, spore-bearing, achlorophyllous organisms that generally reproduce sexually and asexually, and whose usually uni- or multicellular filamentous, branched somatic structures are typically surrounded by cell walls containing chitin or cellulose or both these substances together with many other complex organic molecules principally polysaccharides, in addition to proteins, lipids, and other substances as well.⁽¹²⁾

2.2 Somatic structures

The fungal **thallus**, typically consists of microscopic threads or filaments that branch in all directions, spreading over or within the utilized substratum. Each of these filaments is known as a **hypha**. A **hypha** is made of a thin transparent tubular wall filled or lined with a layer of protoplasm varying in thickness, and is interrupted at irregular intervals by partitions or cross-walls that divide each hypha into cells. These cross-walls are called **septa**. The **mycelium**, is the mass of hyphae constituting the thallus of a fungus.⁽¹²⁾

2.3 Reproduction

Two general types are recognized: sexual and asexual. **Sexual reproduction** consists of three distinct phases. The first is called plasmogamy, brings two haploid nuclei together in one cell; karyogamy then follows, unites them into one diploid zygote nucleus; and lastly meiosis, which restores the haploid condition in the four nuclei that result from it.⁽¹²⁾

On the other hand, **asexual reproduction**, sometimes is called somatic or vegetative, does not involve the union of nuclei, sex cells, or sex organs. It is more important; as it results in the production of numerous individuals. Asexual methods of reproduction includes, fragmentation, fission of somatic cells, budding of somatic cells, or production of spores, which is the most common method.⁽¹²⁾

Some fungi employ fragmentation of hyphae as a normal mean of propagation. The hyphae may break up into their component cells that behave as spores. These spores are known as **arthrospores** (arthroconidia), and are formed of small cuboidal cells with slightly thickened walls.⁽¹³⁾

If the cells become larger, enveloped in a thick wall, and enriched with nutrient materials before they separate from each other or from other hyphal cells adjoining them, they are often called **chlamydospores**. These may be formed singly or in groups and in an intercalary or terminal position.^(12, 13)