IDENTIFICATION AND DIFFERENTIATION OF MALASSEZIA SPECIES IN PITYRIASIS VERSICOLOR BY PCR-RFLP METHOD

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Presented by:
Nargz Hussein Abdulah Al-Azawi

M. B.Ch.B.

Supervised By:

Prof.Dr. Adel Imam M.D.

Head of Department & Professor of Dermatology , Venereology and Andrology

Faculty of Medicine

Ain Shams University

Dr. Ranya Lotfi M.D.

Assistant Professor of Dermatology , Venereology and Andrology

Faculty of Medicine

Ain Shams University

Dr. Wael Saudi M.D.

Lecturer of Dermatology , Venereology and Andrology

Faculty of Medicine

Misr University for Science and Technology

Faculty of Medicine

Ain Shams University

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List of Contents

List of Figures

List of Tables

Abbreviations

PV.....Pityriasis versicolor

M .....Malassezia

PCR .....Polymerase chain reaction

SD.....Seborrheic Dermatitis

AD.....Atopic Dermatitis

PS.....Psoriasis

CRP.....Confluent and Reticulate Papillomatosis

ICUs.....Intensive care units.

GYP-S……Glucose-Yeast-Pepton-Supplement

RFLP ……Restriction fragment length polymorphism

INTRODUCTION AND AIM OF THE WORK

Introduction

Pityriasis versicolor, is a chronic superficial fungal infection that appears as flat, slightly scaly discolored patches on the upper trunk, neck, and upper arms**.**

The word "versicolor" implies that this rash can have several different colors, and indeed the eruption may be lighter or darker than a person's normal skin or even have a reddish appearance **(Deepak et al., 2005).** PV is one of the most common dermatomycosis, and is especially prevalent in regions with a warm humid climate, where up to 40% of the population may be affected, Pityriasis versicolor is the prototypical skin disease etiologically connected to *Malassezia* species **(Gaitanis et al., 2012).**

Members of the genus *Malassezia* are lypophilic and/or lipid-dependent, unipolar budding yeasts, characterized by a thick cell wall. These yeasts are often common commensals of the skin of humans and other animals **(Cafarchia et al.,2011).**

Malassezia yeasts, since first reported in 1889, are known to be implicated in various diseases, including pityriasis versicolor, seborrheic dermatitis, and *Malassezia* folliculitis. Recently, there have been a growing number of reports which show the implication of *Malassezia* yeasts in atopic dermatitis, confluent and reticulated papillomatosis (Gougerot-Carteaud), and *Malassezia* onychomycosis. Furthermore the pathogenicity of *Malassezia* yeasts comes into the surface as systemic infections with *Malassezia* are identified in premature neonates and immunodeficient adult patients undergoing lipid replacement therapy via vein catheter **(Jang et al., 2009).**

The use of molecular methods has revolutionized the study of disease due to *Malassezia* species because the organisms are fastidious and difficult to identify, the introduction of a new taxonomy in 1996 led to a series of revealing

studies of the etiology of diseases linked to *Malassezia* species **(Hay and Jones, 2010).** *Malassezia* species can be identified through their morphological features and biochemical characterization **(Guillot et al., 1996).**

However, these phenotypic methods are usually time consuming, lack sufficient discriminatory power, and are unable to unambiguously differentiate newly identified species. Although various DNA-based molecular methods have been described to overcome this problem **(Theelen et al., 2001).** A simple, reliable, and cost effective method is still needed for differentiation of *Malassezia* species, therefor, the application of PCR-based technique using restriction enzyme digestion used for discrimination between *Malassezia* species **(Mirhendia et al., 2005).**

Aim of the work

To isolate and identify different species of *Malassezia* in pityriasis versicolor patients by using the rapid and accurate molecular biology method (PCR- RFLP) which overcome the limits of morphological and biochemical methods.

REVIEW OF LITERATURE

Malassezia Yeast

The genus *Malassezia* comprises a group of superficial dimorphic fungi occurring as normal skin flora on the human body, however, they can also cause infection or are associated with certain skin diseases. Rarely, they can become invasive, to cause opportunistic systemic infection in the presence of certain predisposing factors **(Inamadar and Palit, 2003).**

However, the complexity of the interaction of a unicellular eukaryotic organism (*Malassezia*) with a tissue of a multicellular organism (skin) makes understanding the interactions and development of disease a complex process **(Gaitanis et al., 2012).**

Their habitat is primarily the skin of mammals and birds, with the highest counts being on the areas rich in sebaceous gland such as head and upper trunk, the organisms become part of the normal skin flora by three to six months of age .The frequency and density of colonization in healthy individuals is related to the age and to the activity of the sebaceous glands in the area studied. It has been demonstrated that *Malassezia* yeasts inhabit various body sites including scalp, forehead, shoulder, abdomen, lower axilla, groin and forearm, due to increased density of sebaceous glands at these sites **(Smolinski, 2005).**

During the past two decades, this group of fungi has gained on increasing importance. The nomenclature has been changed, newer species have been identified and associations of the organism with different disease entities have been described **(Midgley et al., 1998).**