

A REPORT OF *PAECILOMYCES VARIOTII* ON HUMAN FROM PAKISTAN

SYED QAISER ABBAS¹, ARIF MAAN², JAVED IQBAL², MUBASHIR NIAZ¹, MUHAMMAD WAQAS¹, HUSSAIN AHMED¹, ASIFA LIAQAT¹ AND SIDRA¹

¹Department of Botany, Government College University, Faisalabad, Pakistan

²Department of Dermatology, D.H.Q. Hospital, Faisalabad, Pakistan.

Abstract

Paecilomyces variotii is for the first time reported on human beings from Faisalabad, Pakistan. The fungus was isolated, identified and illustrated.

Introduction

A project on the Study of Dermatophytes was conducted at the Laboratory of Mycology and Biotechnology, Department of Botany, GC. University, Faisalabad, in collaboration with the Department of Dermatology, DHQ Hospital, Faisalabad. In Pakistan extensive work on dermatophytes has not been carried out (Abbas & Ghaffar, 1992; Ahmed *et al.*, 1997; Mirza & Qureshi, 1978). However, some work has been carried out at Karachi (Khan & Anwar, 1968a, 1968b, 1969; Khan & Hafiz, 1979; Khan & Sheikh, 1981; Farooqi *et al.*, 1982a, 1982b, 1982c; 1983, 1984a, 1984b, 1987; Haroon 1979, 1985, 1988; Anis *et al.*, 1988; Dilnawaz & Naseer 2001; Farheen & Siddiqui, 2003; Sabir *et al.*, 2003, 2004; Yasmeen & Khan 2005; Ansari & Siddiqui, 2006; Ahmad *et al.*, 2006; Ali *et al.*, 2006); at Lahore (Hussain *et al.*, 1994, Jahangir *et al.*, 1999, Bhokhari, 1999; Aman *et al.*, 2001a, 2001b, 2002; Qazi & Sikender 2005; at Rawalpindi (Mirza *et al.*, 2007); at Chitral (Haroon *et al.*, 1987); at Jamshoro and Karachi (Thebo *et al.*, 2006).

Three cases were reported during studies, with the following symptoms and complaints:

1. A female patient of 35 years, with 6 family members, complained white spots on her back. The patient was resident of Afghanabad, Faisalabad. She was a housewife. The clinical diagnosis of the patient was *Tinea corporis*.
2. The other patient was of 08 years, living with 7 family members, complained about hair suffering from the fungal attack. The patient was resident of Sheikh colony, Faisalabad. He was a student of class 3. The clinical diagnosis is *Tinea capitis*.
3. The third patient of 19 years, living with 6 family members was suffering from ring worm of face. The patient was resident of Jaranwala, Faisalabad. He was a student of F.Sc. The clinical diagnosis is *Tinea faciei*.

The samples were collected and taken aseptically in polythene bags, from the patients to the Mycology and Biotechnology Laboratory, Department of Botany, G.C. University, Faisalabad. They were cultured in Sabouraud's agar media, and kept at 25°C for two weeks. In the slides prepared from the culture, longer chains of elliptical conidia were observed.

Material and Methods

For collection of samples, surgical blades; sterilized polythene bags; and hand lens were used. The collected samples were kept in polythene bags. Data about the patients including their name, age, sex, educational status, nature of job and residence, were recorded.

Isolation: For isolation of fungi following methods were used:

Direct plating: The specimens were directly placed on sterilized Sabouraud's dextrose agar media.

Media: Sabouraud's dextrose agar media is used for culturing of fungi (Sabouraud, 1910)

Nutrient agar	2g
Peptone	1g
Glucose	4g
Distilled water	100ml

Streptomycin 100 mg/L was added into the media as antibacterial agent. Sabouraud's dextrose agar medium was autoclaved at 125°C for 30 minutes and then poured in sterilized Petri plates. The Petri plates were incubated in incubator (CB210#06_02897) at 25°C for 1-2 weeks.

Preparation of slides: Slides of the fungus were prepared from the colonies grown on agar media. Lacto phenol with cotton blue was used for staining and mounting of fungus.

The slides were examined under calibrated optical microscope M7000D series cat, M7002D, with different magnifications.

Photographs were taken with digital camera (6 mega pixels, DSC-S500 Sony). Fungus was identified up to species level by consulting with standardized mycological literature (Ellis, 1971; Carmichael *et al.*, 1980; Kirk & Cooper, 2008, CABI Bioscience data base; index fungorum; www.doctorfungus.org).

Description of the fungus

The colony: Light brown colour on both side of Petri dish on Sabouraud agar media. It has fine granular appearance.

The mycelium hyaline, septate, thin walled and branched. Conidiophore hyaline branched, 17-75x1-4 µm. Conidiogenous cells cylindrical formed in group of 3-5 loosely clustered, tapering gradually to fine point 4-18 x 1-3 µm. Conidia globose, spindle to ellipsoidal, produced endogenously to form a very long chain, enclosed in a mucilagenous sheath, 2-15 x 1-4 µm.

The fungus was identified as *Paecilomyces variotii*.

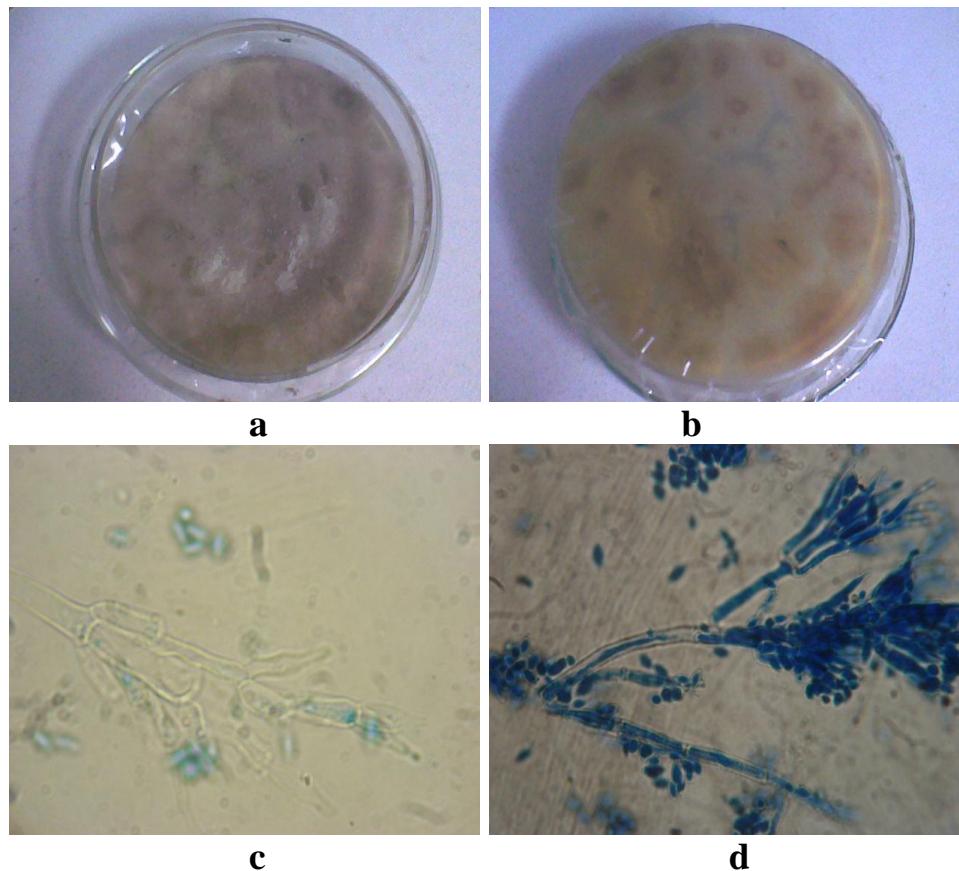


Fig. 1. *Paecillomyces variotii* (a-d); a) upper side of Colony, b) reverse of colony, c,d) conidiophore with conidia (1000X).

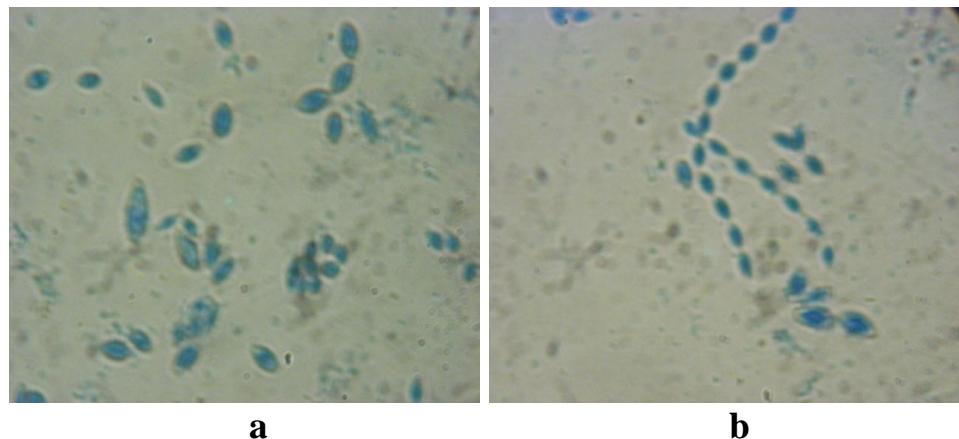


Fig. 2. *Paecillomyces variotii* (a-b); a) conidia (1000X), b) conidia in long chain (1000X).

Results and Discussions

Paecilomyces is a cosmopolitan filamentous fungus which inhabits the soil, decaying plants and food products. It resembles closely with the *Penicillium* but can easily be differentiated by its loosely branched conidiophore and cylindrical conidiogenous cells with tapering tips. Some species of *Paecilomyces* are isolated from insects. It is usually considered as a contaminant but may also cause infections in humans and animals (De Hoog *et al.*, 2000).

The genus contains several species. The most common are *Paecilomyces lilacinus* and *Paecilomyces variotii*. The color of the colony and certain microscopic features help in differentiation of the *Paecilomyces* species from each other. Another feature that helps in species identification is the thermophilicity. *Paecilomyces crustaceus* and *Paecilomyces variotii* are thermophilic and can grow well at temperatures as high as 50 and possibly 60°C (De Hoog *et al.*, 2000, Sutton *et al.*, 1998). *P. variotii* also causes Hyalohyphomycosis in obstetrical patients (Athar *et al.*, 1996).

Paecilomyces species can cause various infections in humans. These infections are occasionally referred to as *Paecilomycosis*. *Paecilomyces* may develop corneal ulcer, keratitis and endophthalmitis due to extended contact lens use or ocular surgery (Pettit *et al.*, 1980). *Paecilomyces* is among the emerging causative agents of opportunistic mycoses in immuno compromised hosts (Groll & Walsh, 2001). Direct cutaneous inoculation may lead to these infections (Orth *et al.*, 1996). These infections also involve onychomycosis (Fletcher *et al.*, 1998).

This is the first report of *Paecilomyces variotii* in Pakistan, acting as a human pathogen.

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