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A REPORT OF *PAECILOMYCES VARIOTII* ON HUMAN FROM PAKISTAN

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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 & Sidiqui, 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 corporus*.
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^{o}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: Saboraud'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^{o}C for 30 minutes and then poured in sterilized Petri plates. The Petri plates were incubated in incubator (CB210#06_02897) at 25^{o}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 mycelim hyaline, septate, thin walled and branched. Conidiophore hyaline branched, 17-75x1-4 μm. Conidiogenous cells cylindrical formed in group of 3-5 loosly 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*.

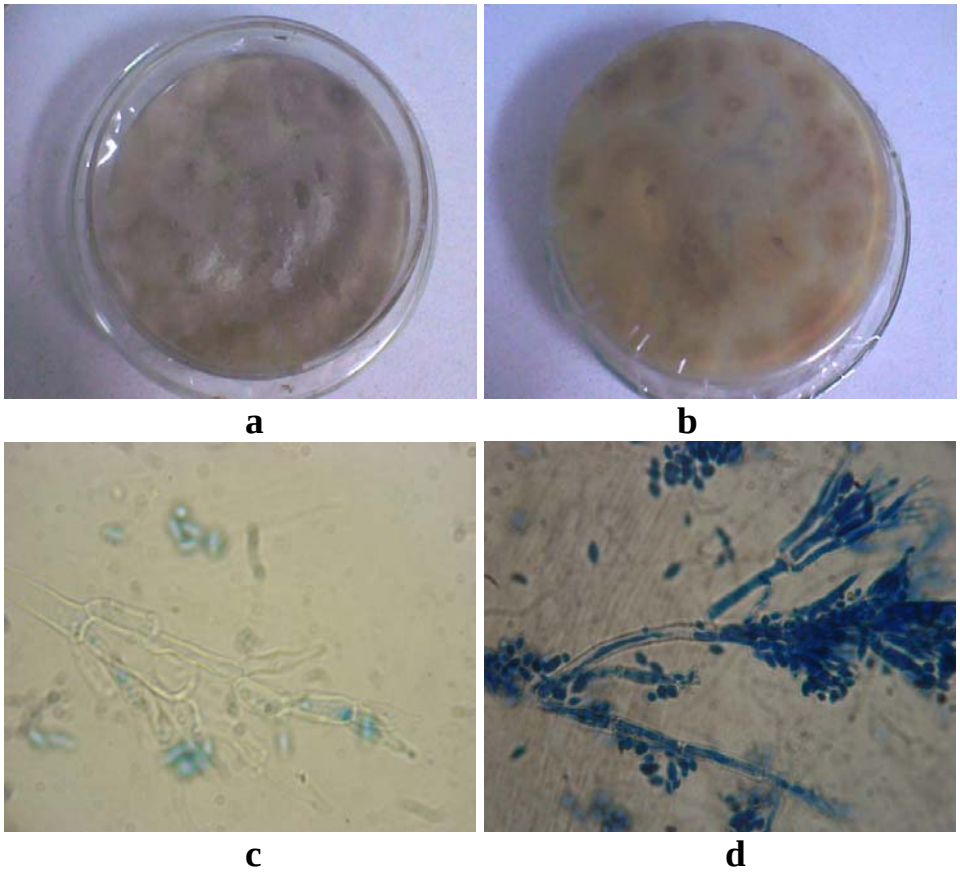

Fig. 1. *Paecillomyces variotii* (a-d); a) upper side of Colony, b) reverse of colony, c,d) conidiophore with conidia (1000X).

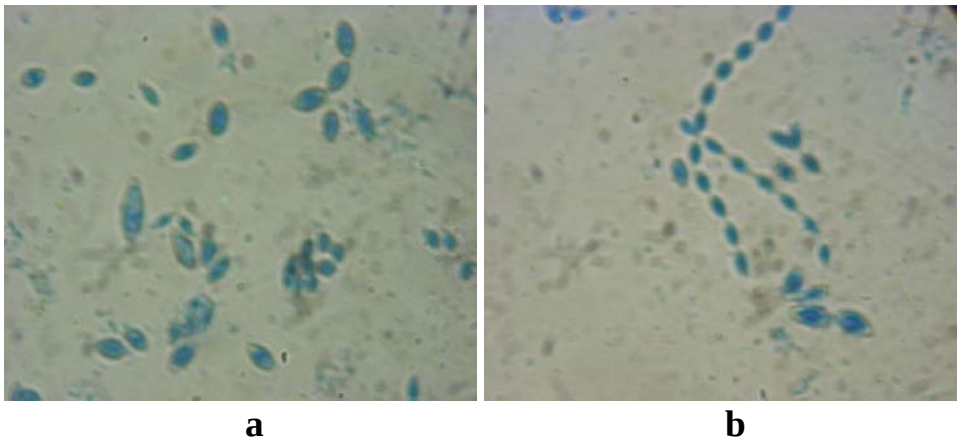

Fig. 2. *Paecillomyces variotii* (a-b); a) conidia (1000X), b) conidia in long chain (1000X).

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.

References

Abbas, S.Q. and A. Ghaffar. 1992. History of Mycology in Karachi area. In: *Status of Plant Pathology in Pakistan*, 157-170.

Ahmad, S., S.H. Iqbal and A.N. Khalid. 1997. *Fungi of Pakistan.* Sultan Ahmad Mycological Society of Pakistan. Department of Botany, University of the Punjab. pp. 248.

Ahmed, I., Z. Ahmed and S. Nasreen. 2006. Prevalence of *Tinea capitis* and asymptomatic carriage amongst school going children. *J. Pak. Assoc. Derma.*, 16(4): 215-219.

Ali, S.S., A. Zafar, S. Muzzafar, F. Aslam and J.A. Khan. 2006. Bilateral breast enlargement due to *Trichophyton rubrum*. *The breast*, 15(2): 263-265.

Aman, S., I. Hussain and T.S. Haroon. 2001a. Onchomycosis: is colour change a hall mark of the disease. *J. Pak. Assoc. Derma.*, 11(4): 3-6.

Aman, S., I. Hussain, T.S. Haroon, M.A. Bokhari and K. Khurshid. 2001b. *Tinea unguium* in Lahore, Pakistan. *Medical Mycology*, 39(2): 177-180.

Aman, S., I. Hussain and T.S. Haroon. 2002. *Tinea capitis*: still no change in the etiological spectrum of disease in our scenario. *J. Pak. Assoc. Derma.*, 12(3): 119-21.

Anis, T., A. Aziz. M.I. Haque and T.S. Haroon. 1988. Study of dermatophytes in 100 hospitalised diabetics. *J. Pak. Med. Assoc.*, 38: 167.

Ansari, F. and S.A. Siddiqui. 2006. Prevalence of dermatophytic infection in Karachi, Pakistan. *Pak. J. Bot*., 38(3): 833-836.

Athar, M.A., A.S. Sekhon, J.V. McGrath and R.M. Melone. 1996. Hyalohypomycosis caused by *Paecilomyces variotti* in an obstetrical patient. *European Journal of Epidemiology*, 12: 33-35.

Bokhari, A., I. Hussain, M. Jahangir, T.S. Haroon, S. Aman and K. Khurshid. 1999. Onychomycosis in Lahore, Pakistan. *Inter. J. Dermatol.*, 38(8): 591-595.

Carmichael, J.W., W.B. Kendrick, I.L. Cooners and L. Sigler. 1980. *Genera of Hyphomycetes*. The University of Alberta Press, Canada, pp. 385.

De Hoog, G.S., J. Guarro, J. Gene and M.J. Figueras. 2000. In: Atlas of Clinical Fungi. *Centraalbureau voor Schimmelcultures, Utrcht, The Netherlands.*

Dilnawaz, M. and R.D. Naseer. 2001. Comparison of various diagnostic Modalities in *Tinea pedis*. *J. Pak. Assoc. Derma*., 11(1): 625-627.

Ellis, M. B. 1971. *Dematacious Hyphomycetes*: 59. CAB IMI Kew, Surrey, England.

Farheen, A. and S.A. Siddiqui. 2003. Prevalence of dermatophytic infections in Karachi, Pakistan during the year. *Pak. J. Bot*., 38(3): 833-836.

Farooqi, A.H., A.A. Qazi, K.A. Khan and T.S. Haroon. 1982a. *Tinea capitis* in Karachi. *J. Pak Med. Assoc*., 32: 263-265.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1982b. Study of *Tinea corporis* infection. *Ind. J. Dermatol.,* 27: 63-67.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1982c. Study of dermatomycosis in man and its pathogenicity. *Tehqique,* 1: 27-37.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1983. Scalp infection by *Microsporum nanum. J. Pak. Med. Assoc*., 33: 235-236.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1984a. A case report of *Microsporum ferrugineum* infection in Karachi. *Pak. J. Bot*., 16: 289.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1984b. Scalp infection by *Trichophyton gallinae* (A case report from Pakistan). *Mykosen,* 27: 12.

Farooqi, A.H., K.A. Khan and T.S. Haroon. 1987. Incidence of dermatomycosis in Karachi in relation to variation in climatic conditions. *J. Pak. Med. Assoc*., 37: 293.

Fletcher, C. L., R. J. Hay, G. Midgley and M. Moore.1998. Onchomycosis caused by infection with *Paecilomyces variotti. Br. J. Dermatol.,* 139: 1133-1135.

Groll, A.H. and T.J. Walsh. 2001. Uncommon opportunistic fungi: new nosocomial threats. *Clin. Mic. Infect*., 7: 8-24.

Haroon, T.S. 1979. Dermatophytes causing *Tinea cruris* in Karachi. *J. Pak. Med. Assoc.*, 29: 190-192.

Haroon, T.S. 1985. Pattern of skin diseases in Karachi. *J. Pak. Med. Assoc.,* 35: 73-78.

Haroon, T.S., A.S. Qureshi, A.S. Ali, H.Z. Khan, K.H. Alvi and S. Lakkani. 1987. Study of skin diseases in Chitral, *J. Pak. Med. Assoc.,* 37: 247.

Hussain, I., A.H. Nagi, M. Jahangir, S. Aman and T.S. Haroon. 1994. *Tinea capitis* in Lahore, Pakistan. *Int. J. Dermatol*., 33: 255.

Jahangir, M., I. Hussain, K. Khurshid and T.S. Haroon. 1999. A clinico-etiologic correlation in *Tinea capitis*, *Inter. J. Dermatol*., 38(4): 275-278.

Khan, A.A. and A. Hafiz. 1979. Casual agents of Dermatomycosis isolated in Karachi. *J. Pak. Med. Assoc.,* 29: 50-54.

Khan, K.A. and A.A. Anwar. 1968a. Study of 73 cases of *Tinea capitis* and *Tinea favosa* in adults and adolescents. *J. Investi. Dermat.,* 51(6): 474-477.

Khan, K.A. and A.A. Anwar. 1968b. Dermatophytes infection of nails. *Kar. Univ. St.,* 5: 40-47.

Khan, K.A. and A.A. Anwar. 1969. The etiology of *Tinea cruris* in Karachi. *Br. J. Dermatol*., 81: 858-860.

Khan, K.A. and N.A. Sheikh. 1981. Study of *Tinea corporis* infection and its etiology. *Kar. Univ. J. Sci.,* 9: 85-90.

Kirk, P. and J. Cooper. 2008. CABI Bioscience database; *Index fungorum.*

Mirza, J.H. and M.S.A. Quereshi. 1978. *Fungi of Pakistan*. University of Agriculture, Pakistan.

Mirza, S., H. Gardezi, Y. Khan and E.W.M. Ameen. 2007. Subcutaneous facial mycosis in a child due to *Madurella mycetomatis. J. Pak. Med. Assoc.,* 57(9): 466-468.

Orth, B., R. Frei, P.H. Itin, M.G. Rinaldi, B. Speack, A. Gratwohl and A.F. Widmer. 1996. Outbreak of invasive mycoses caused by *Paecilomyces lilacinus* from a contaminated skin lotion. *Ann. Intern. Med*., 125: 799-806.

Pettit, T.H., R.J. Olson, R.Y. Foos and W.J. Martin. 1980. Fungal endophthalmites following intraocular lens implantation. A surgical epidemic. Arch. Ophthalmol.

Qazi, J.I. and S. Sikandar. 2005. Isolation of *Trichophyton* species from hair samples. *Mycopathol*., 3: 37- 44.

Sabir, M., S.A. Kharal, S.S. Ahmed, A. Hafiz, S. Rizvi and A.A. Abbasi. 2003. Etiology of *Tinea corporis* in Karachi. *Med. Dent. Coll.,* 8(1): 38-40.

Sabir, M., S.A. Kharal, S.S. Ahmed, M. Ahmed and A.A. Abbasi. 2004. Dermatophytes causing *Tinea cruris* in Karachi *Med. Dent. Coll*., 9(2): 558-61.

Sabouraud, R. 1910. *Les teignes. Masson*, Paris. 5: 148-181.

Sutton, D.A., A.W. Fothergill and M.G. Rinaldi. 1998. Guide to clinically Singnificant Fungi. Willians & Wilkins, Baltimore.

Thebo, N.K., H. Abro, A.Q. Soomro, J. Anwer and M. Suhail. 2006. Isolation and identification of dermatophytes from Sindh, Pakistan. *Pak. J. Bot.,* 38(2): 493-495.

Yasmeen, N. and M.R. Khan. 2005. Spectrum of common childhood skin diseases: a single centre experience *J. Pak. Med. Assoc.*, 55(2): 60-63.

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