

A REPORT OF *THERMOMYCES LANUGINOSUS* TSIKLINSKY ON HUMANS FROM PAKISTAN

SYED QAISER ABBAS*, MUBASHIR NIAZ*, ARIF MAAN**,
JAVED IQBAL**, MUHAMMAD WAQAS*, HUSSAIN AHMED*,
ASIFA LIAQAT* AND SIDRA*

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

**Department of dermatology, D.H.Q. Hospital Faisalabad, Pakistan.

Abstract

Thermomyces lanuginosus Tsiklinsky is for the first time reported on two female patients from Faisalabad, Pakistan.

Introduction

A study on the Dermatophytes was conducted at the Laboratory of Mycology and Biotechnology, Department of Botany, GC University, Faisalabad. The samples were collected from the Department of Dermatology, D.H.Q. Hospital, Faisalabad.

In Pakistan extensive work on dermatophytes has not been carried out (Abbas & Ghaffar, 1992; Ahmad *et al.*, 1997). However, some work has been carried out at Chitral (Haroon *et al.*, 1987), Karachi (Faruqi *et al.*, 1981, 1982a, 1982b, 1983, 1984, 1987; Haroon, 1979; Khan & Hafiz, 1979, Lahore (Aman *et al.*, 2001, 2002; Hussain *et al.*, 1994) Faisalabad.(Abbas *et al.*, 2009).

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

1. A female patient named Robina Kausar of 38 years with 5 family members, complained a ringworm structure on the neck. The patient was resident of Mansoorabad, Faisalabad. She was a housewife. The clinical diagnosis is *Tinea corporis*.
2. The other patient named Sumaira of 24 Years with 4 family members had white spots on her chest. The patient was resident of Bagranwala, Faisalabad. She was a housewife. The clinical diagnosis of the patient was *Tinea corporis*.

Material and Methods

The scrapings from the patients were taken aseptically in polythene bags to the Mycology and Biotechnology Laboratory, Department of Botany, G.C. University, Faisalabad. 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 patient; including, their name; age; sex; educational status; nature of job and residence, were recorded.

For isolation of fungi the specimens were placed directly on sterilized Sabouraud's dextrose agar medium containing:

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

100mg/L of streptomycin was added into the medium as antibacterial agent. The medium was autoclaved at 121°C and 15 lb/inch² and then poured in sterilized petriplates. The petriplates were incubated in incubator (CB210#06-02897) at 25°C for 1-2 weeks.

Slides were prepared with help of needles sterilized by heating. Lacto phenol with cotton blue was used for staining of the fungus.

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

For identification of the fungus following characteristics were examined:

1. Colony appearance; Color and texture from both sides of Petri dish.
2. Mycelium; Color, septation, branching.
3. Conidiophores; septation, color, branching and its measurements.
4. Conidiogenous cells; Shape, septation, color and measurements/mode of conidiogenesis.
5. Conidia; Shape, septation, color and their measurements.

Photographs were taken with digital camera (Sony, T 20, 8.1 megapixels). Fungus was identified up to species level by consulting standardized mycological literature (Ellis, 1971, 1976; Carmecheil *et al.*, 1980; Kirk, 2009; CABI Bioscience data base; index fungorum; www.doctorfungus.org).

Description of fungus

The colony, off white in colour was on upperside of Petridish on Sabouraud's medium and tuft cottony appearance with radial depressions. The reverse side of colony has cream colour.

Mycelium hyaline, septate, thin walled and branched. The conidiophore hyaline and cylindrical. Conidia attached at bulging conidiogenous cells. Conidia are mostly spherical and echinulated, appearing blackish brown in color. Conidia attached terminally on the conidiogenous cells.

The fungus was identified as *Thermomyces lanuginosus*. Tsiklinsky

Results and Discussions

Thermomyces is a thermophilic fungus, erected by Tsiklinsky (1899). Four species of *Thermomyces* are reported (Kirk & Cooper, 2009): *Thermomyces ibadanensis* Apinis & Eggers (1966), *Thermomyces lanuginosus* Tsiklinsky (1899), *Thermomyces stellatus* (Bunce) Apinis (1963) and *Thermomyces verrucosus* (Pugh, Blackman & Morgan-jones (1964).

Generally *Thermomyces lanuginosus* is a saprophytic fungus found in soil from Faisalabad, rabbit and goat dung and cotton husk (Qureshi *et al.*, 1980). *Zea mays*, mouldy hay, leaf litter, soil and man (Ellis, 1971). Occasionally it is reported to be pathogenic to man (Ellis, 1971).

It is the thermophilic fungus, growing in between 30 to 60°C (Cooney & Emerson, 1964). The optimum temperature of the fungus is 45 to 50°C (Qureshi *et al.*, 1980).

Thermomyces lanuginosus, reported for the first time as pathogenic to man from Pakistan as a pathogenic on human beings is the first report from Pakistan.

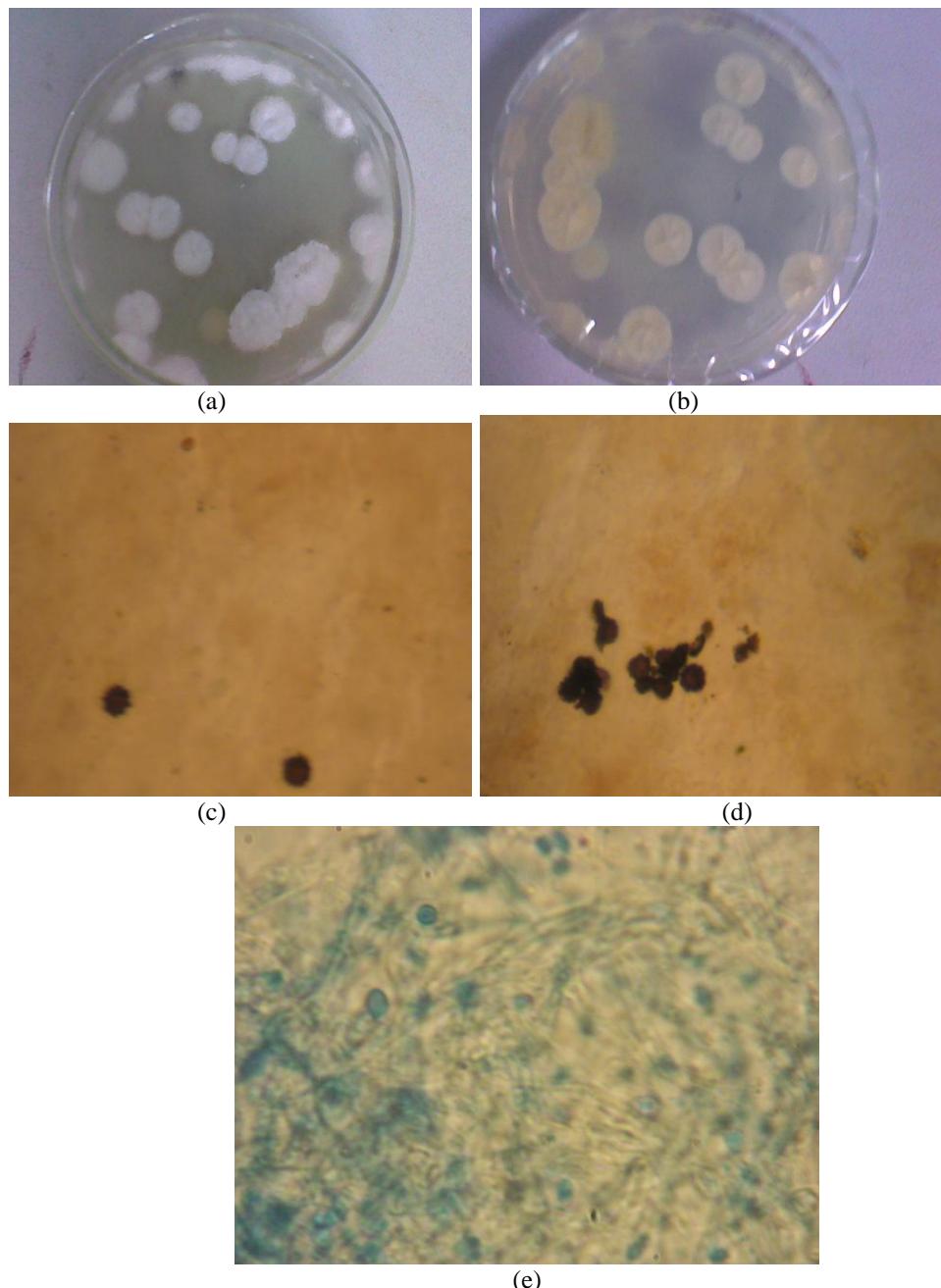


Fig. 1. *Thermomyces lanuginosus* (a-e), a) Upper side of Colony, b) Reverse of colony, c) Separate conidia 1000X, d) Conidia in group 1000X, e) Conidiophores with conidia 1000X.

Acknowledgements

The authors thank Higher Education Commission (HEC) Pakistan for providing funding to work on “Studies on the dynamics and frequency distributional pattern on air borne biotic contaminants of Faisalabad district and their potential health hazard on human population” under which the present study was carried out.

References

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

Abbas, S.Q., A. Maan, J. Iqbal, M. Niaz, M. Waqas, A. Hussain, A. Liaqat and Sidra. 2009. A report of *Paecilomyces variotti* on human from Pakistan. *Pak. J. Bot.* 41(1): 367-472.

Aman, S., I. Hussain, T.S. Haroon, M.A. Bokhari and K. Khurshid. 2001. *Tinea unguium* in Lahore. *Pak. Med. Mycology*, 39: 177-180.

Aman, S., I. Hussain and T.S. Haroon. 2002. *Tinea capititis*: Still no change in the etiological spectrum of disease in our scenario. *J. Pak. Assoc Derma.*, 12: 119-1921.

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.

Apinis. 1963. *Thermomyces stellatus* (Bunce). *Nova Hedwicia*, 5: 75.

Apinis and Eggins. 1966. *Thermomyces ibadanensis*. *Trans. Br. Mycol. Soc.*, 49(4): 631.

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

Cooney, D.G. and R. Emerson. 1964. *Thermophilic fungi*. W.H. Freeman and Co., San Francisco.

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

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

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

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

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

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

Faruqi, A.H., A.A. Qazi, K.A. Khan and T.S. Haroon. 1981. *In vitro* antifungal activity of naftifine (SN 105-843 gel) against dermatophytes. *J. Pak. Med. Assoc.*, 31: 279-282.

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

Haroon, T.S., A.S. Qureshi, A. Sher 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 capititis* in Lahore, Pakistan. *Int. J. Dermatol.*, 33: 255.

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

Kirk, P. and J. Cooper. 2009. CABI Bioscience data base; index of fungorum.

Pugh, Blakeman and Morgan-Jones. 1964. *Thermomyces verrucosus*. *Trans. Br. Mycol. Soc.*, 47(1): 116.

Qureshi, M.S.A., J.H. Mirza and K.A. Malik. 1980. Cellulolytic activity of some thermophilic and thermotolerant fungi of Pakistan. *Biologia*, 26(1&2): 201-217.

Tsiklinsky. 1899. *Thermomyces lanuginosus*. *Annls. Inst. Pasteur, Paris*, 13: 500-505.