



## Dermatophytosis in the Sub-Himalayan region – Is *Epidermophyton fluccosum* Re-emerging?

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### Abstract

*Dermatophytosis is a common cutaneous condition affecting humans and animals. The causative agents are keratinophilic fungi of three genera, Trichophyton, Microsporum and Epidermophyton. Epidermophyton sp. is exceptional isolate from dermatophytosis in cases from the sub-Himalayan region. Recently a patient presented with tinea corporis and tinea cruris. Epidermophyton fluccosum was isolated probably this indicates the onset of changing spectrum of dermatophytosis in the sub-Himalayan region. Epidemiology of dermatophytosis is changing at a continuous pace.*

**Keywords:** *Epidermophyton fluccosum, dermatophytosis, Trichophyton*

### Introduction

Dermatophytosis is a common cutaneous condition affecting humans and animals. The causative agents are keratinophilic fungi of three genera, *Trichophyton*, *Microsporum* and *Epidermophyton*. *Trichophyton* is the most common causative agent of dermatophytosis. *Epidermophyton fluccosum* is an anthropophilic dermatophyte that invades the skin and nails of humans. *Epidermophyton sp.* is exceptional isolate from dermatophytosis in cases from the sub-Himalayan region. Recently a patient

presented with tinea corporis and tinea cruris. *Epidermophyton fluccosum* was isolated from the scrapings from the lesions. We are reporting this case as probably this indicates the onset of changing spectrum of dermatophytosis in the sub-Himalayan region.

### Case Report

A 37 years old male adult presented with annular itchy lesions on the glabrous skin of abdomen and groin for three months (Figure 1). Lesions were

annular with slight erythema and thin white scales were seen. Scrapings were collected aseptically and wet mount in 10% KOH was subjected to direct microscopy. Arthroconidia could be visualized. Culture was done on a set of Sabouraud's dextrose agar (SDA) with chloramphenicol and SDA with chloramphenicol and cycloheximide and incubated at 25°C. Growth was seen after 10-12 days in both the culture tubes. Colonies were typically khakhi yellow to brown, slightly raised on the obverse and reverse was yellowish brown (Figure 2). Microslide culture was performed and lactophenol cotton blue wet mounts done. Characteristic club-shaped macroconidia with 3-4 septations were seen in clusters, microconidia were absent and hyphae were thin, septate and hyaline consistent with *Epidermophyton fluccosum* (Figure 3).

Patient was started on itraconazole in dose of 100mg twice a day and continued for 4 weeks along with topical eberconazole 1% cream. A favourable response to therapy was observed and patient was cured after continuation of itraconazole for another 2 weeks.



**Figure 1** – Annular, erythematous lesions involving the skin of the abdomen and groin (tinea corporis and tinea cruris) in a case of Dermatophytosis.



**Figure 2** Sabouraud's dextrose agar showing characteristic growth of *Epidermophyton fluccosum*.



**Figure 3** Lactophenol cotton blue wet mount showing club shaped macroconidia of *Epidermophyton fluccosum*. (Magnification X400)

### Discussion

*Epidermophyton fluccosum* is an uncommon agent of dermatophytosis in our region of sub-Himalayan, India. Only one case has been reported in various compilations from this geographical area in the last decade. The review of studies from this region shows unusual occurrence of *Epidermophyton fluccosum* (Table 1). This species has always trailed

in the distribution spectrum. A study of 130 onychomycosis cases reported *T. rubrum* (32.6%), *T. mentagrophytes* (6.1%), *T. verrucosum* (2.1) but no isolate of *Epidermophyton fluccosum*<sup>[1]</sup>. A solitary isolate of *Epidermophyton fluccosum* was reported from another study which documented *T. rubrum* (66.17%), *T. mentagrophytes* (19.11%), *T. violaceum* (7.35%) and *T. tonsurans* (2.94%)<sup>[2]</sup>. Between January 2011 and December 2016, out of 175 culture proven cases *T. mentagrophytes* (62.28%), *T. Rubrum* (23.4%), *T. violaceum* (6.85%), *M. gypseum* (3.42%), *T. tonsurans* (2.85%), *M. ferruginum* (0.5%) are documented but *Epidermophyton fluccosum* was not observed in any fungal culture<sup>[3]</sup>. Kaur *et al* and Bhatia *et al* conducted studies on dermatophytosis and isolated *Trichophyton* species as the most frequent, few isolates of *Microsporum* species but *Epidermophyton fluccosum* was not isolated from any case by these authors either<sup>[4,5]</sup>.

Dermatophytosis is a common cutaneous condition and *Trichophyton* species account for majority of cases from India. In the early part of this century, *T. rubrum* was the leading agent of tinea but lately, number of cases due to *T. mentagrophytes* has surpassed *T. rubrum*. Epidemiological patterns change due to migrating population, increased travel and varying traditional and cultural practices. The present case heralds change in the existing epidemiological spectrum and call for awareness regarding emerging species of causative agents of dermatophytosis. Knowledge regarding epidemiological range is relevant to diagnosis and effective management of dermatophytosis.

### Conclusion

Epidemiology of dermatophytosis is changing at a continuous pace. The re-emergence of cases due to unusual species may be the beginning of a continuing change in the ongoing pattern of the disease. The occurrence of dermatophytosis due to *Epidermophyton fluccosum* in a recent case is probably the start of such a variation.

**Table 1** Various studies on dermatophytosis from the region in the last decade

Author & Study Period	Sample size	Spectrum of dermatophytes
Gupta et al (March 2005-Feb 2006)	130	<i>T. rubrum</i> (32.6%), <i>T. mentagrophytes</i> (6.1%), <i>T. verrucosum</i> (2.1), <i>Epidermophyton fluccosum</i> (0%) Others
Bhagra et al (May 2008-April 2009)	100	<i>T. rubrum</i> (66.17%), <i>T. mentagrophytes</i> (19.11%), <i>T. violaceum</i> (7.35%), <i>T. tonsurans</i> (2.94%) <i>Epidermophyton fluccosum</i> (1.47%)
Verma et al (Jan 2011-Dec 2016)	175	<i>T. mentagrophytes</i> (62.28%), <i>T. rubrum</i> (23.4%), <i>T. violaceum</i> (6.85%), <i>M. gypseum</i> (3.42%), <i>T. tonsurans</i> (2.85%), <i>M. ferruginum</i> (0.5%), <i>Epidermophyton fluccosum</i> (0%)
Kaur et al (Jan 2013 – Dec 2013)	162	<i>T. mentagrophytes</i> (48.2%), <i>T. rubrum</i> (32.1%), <i>T. tonsurans</i> (10.7%), <i>T. violaceum</i> (3.6%), <i>T. verrucosum</i> (1.8%), <i>T. schoenleinii</i> (1.8%), <i>M. gypseum</i> (1.8%), <i>Epidermophyton fluccosum</i> (0%)
Bhatia et al (ND)	202	<i>T. mentagrophytes</i> (63.5%), <i>T. Rubrum</i> (35.1%), <i>M. gypseum</i> (1.35%), <i>Epidermophyton fluccosum</i> (0%)

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