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**A Pigment-Producing Dermatophyte Difficult to Classify
as *Trichophyton Rubrum* or *Trichophyton Violaceum* Isolated
from Cases of *Tinea Cruris* and *Tinea Corporis* in Egypt**

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During an investigation done on cases of *tinea cruris* and *tinea corporis* at Ain Shams University Hospitals a dermatophyte difficult to classify was commonly met with. It resembled *Trichophyton violaceum* which is common in Egypt (ABDEL-FATTAH et al. 1967) on the one hand, and *Trichophyton megninii* which was not isolated before in our country on the other hand.

In the present work the "Ain Shams" dermatophyte which was isolated from 24 out of 54 cases of *tinea cruris* and *corporis* is described and identified.

Material and Methods

The dermatophyte was isolated from 17 *tinea cruris* and 7 *tinea corporis* cases. The lesions were progressive and tended to involve extensive areas of skin. The edge of the lesions was characteristically elevated, cord-like and covered with minute vesicles and crusted papules 0.5—1 mm in diameter; the center was brownish and scaly (Fig. 1). Sometimes several small



Fig. 1: Extensive *tinea cruris* with the characteristic edge

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lesions coalesced together forming figurate and geographic lesions, but were still retaining the characteristic inflammatory edge. In one case the same dermatophyte could be isolated from a vesicular lesion on the palm, but was never isolated from nail lesions. All the cases responded well to griseofulvin therapy.

The "Ain Shams" dermatophyte was subcultured on dextrose-agar, peptone agar, test agar nach KIMMIG (RIETH, 1965), glucose and peptone solution (REFAI, RIETH and ITO, 1964). Its nutritional requirements were tested by inoculating the organism on vitamin-free acid hydrolysed casein (Basal medium), on basal medium to which thiamin was added and on basal medium with L-histidin. Control cultures of *T. violaceum* and *T. megninii* were similarly tested for nutritional requirements (GEORG & CAMP, 1957). All investigations were done at the Mycology laboratory, Hamburg University.

Results

Primary culture: On dextrose agar the growth is relatively slow. The colony reaches a size of 4–5 mm in diameter in 10 days, where by that time it is hemispherical, waxy with few projecting spike-like aerial mycelium. The undersurface of the colony is deep violet red. Microscopic examination of the primary culture reveals few microconidia, no macroconidia and sometimes intracalary chlamydospores.

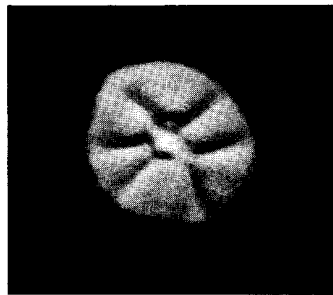


Fig. 2: 15 days old culture

Subculture on dextrose agar (Fig. 2): The "Ain Shams" dermatophyte grows as a flat colony, raised in the center and shows zonation and radiating furrows on the surface. The surface of the colony is covered with short aerial mycelium and is pale reddish white in color. The edge of the colony is a little bit darker in color. The back of the colony presents corrugations and is yellow in the center. At the periphery of the central yellow area there is 4 zones of dark violet brownish red color on a yellow background.

Microscopic examination shows septated hyphae and single born microconidia. No macroconidia are observed.

Subculture on Kimmig agar (Fig. 3): The colony is flat with a central knob. The surface is covered with short aerial mycelium and is purplish white in color. The microscopic picture is the same as on dextrose agar.

Subculture on Peptone agar (Fig. 4): The colony is heaped up, with deep radiating furrows. No pigment is produced.

Subculture on glucose and peptone solution: The dermatophyte grows on the surface of the fluid as a white, hemispherical colony as described by REFAI, RIETH and ITO for *T. rubrum*.

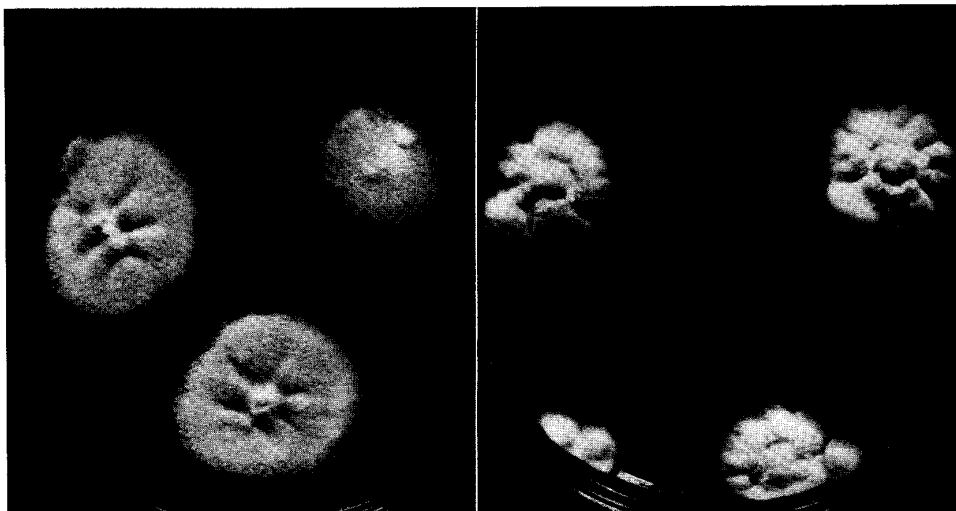


Fig. 3: 15 days old cultures
on KIMMIG agar

Fig. 4: Two weeks old cultures
on peptone agar

Nutritional requirements: The dermatophyte grows readily on the basal medium and shows no necessity for L-histidin or thiamin for its growth. The control *T. violaceum* grows poorly on the basal medium but better growth is obtained when thiamin is added. *T. megninii* requires L-histidin for its growth.

Discussion

The identification of the "Ain Shams" dermatophyte was difficult in primary cultures. The waxy appearance of the colony, the deep red color produced and the presence of few conidia in microscopic examination renders its differentiation from *T. violaceum* not easy. But the presence of aerial mycelium in secondary culture, the growth on the basal medium and its typical growth on glucose-peptone fluid shows that the organism belongs to the rubrum group.

The production in secondary cultures of flat colonies with purplish white surface and the presence of furrows and zonation lead to the suspicion of *T. megninii*. However, *T. megninii* can be excluded because our dermatophyte can grow well on the basal medium without L-histidin.

Trichophyton rubrum is a species which includes a great number of varieties with different cultural morphologies. The colony may be fluffy or suede-like, folded or glabrous, with or without pigment production and the pigmentation varies in intensity. The typical narrow elongated macroconidia may be absent. Therefore *T. rubrum* had received several names in the past, which were regarded sometimes as different species. EMMONS (1934) grouped all these types under one group: the rubrum group with the single species *Trichophyton rubrum*.

Recently, several variants of *T. rubrum* were described in literature. WONG and CHAN (1968) described a variant in Hong Kong which caused infections characterised by being more inflammatory than usual. The authors were kind enough and sent us a subculture

of their strain for comparison. The Hong Kong strain resembles the "Ain Shams" strain as far as the intense inflammatory lesions caused by and the production of deep purplish red pigment is concerned. But it differs from it in several respects: The Hong Kong strain grows more fast, is heaped up and shows a moderate number of macro- and microconidia typical of *T. rubrum*.

SMITH and RUSH-MUNRO (1971) described a rubrum strain isolated from lesions on the back of a 46 years old male Fijian which resemble the "Ain Shams" strain in producing purple red pigment; but several macro and microconidia are produced.

It can be concluded that the "Ain Shams" dermatophyte can be classified as *Trichophyton rubrum*. But the question remains open: Can a variant of *T. violaceum* — in the sense of evolution — acquire morphological characteristics that renders it similar to *T. rubrum* and consequently could be classified in the rubrum group?

Summary

A dermatophyte difficult to classify isolated from lesions of *tinea cruris* and *corporis* at Ain Shams University, Cairo, is described. It resembles *T. violaceum* in primary cultures and *T. megninii* in secondary cultures. The lesions caused by the "Ain Shams" dermatophyte are progressive and more inflammatory than usual. The macro- and microscopic morphology of the organism are studied on dextrose agar, peptone agar, KIMMIG agar and glucose and peptone fluid. The nutritional requirements are studied and compared to control cultures of *T. violaceum* and *T. megninii*.

It is shown that the "Ain Shams" dermatophyte belongs to the rubrum group. The question remains open, if through an evolutionary process a variant of *T. violaceum* can acquire characteristics similar to *T. rubrum* and can be consequently classified in the rubrum group.

Zusammenfassung

Ein Dermatophyt wird beschrieben, der aus Krankheitserscheinungen vom Bild der *Tinea cruris* et *corporis* in der Ain Shams-Universität, Cairo, isoliert wurde und schwer zu klassifizieren ist. In Primärkulturen ähnelt der Stamm *Trichophyton violaceum*, in Subkulturen *T. megninii*. Die durch den „Ain Shams“-Stamm verursachten Läsionen entwickelten sich rascher und entzündlicher als üblich. Die makro- und mikroskopische Morphologie wurde auf Dextrose-, Pepton- und Kimmig-Agar sowie in Glucose- und Pepton-Bouillon untersucht. Die Nahrungsbedürfnisse wurden mit Kontrollstämmen von *T. violaceum* und *T. megninii* verglichen.

Es wird dargelegt, daß der „Ain Shams“-Stamm zur Rubrum-Gruppe gehört, doch bleibt die Frage offen, ob eine Variante von *T. violaceum* die Eigenschaften von *T. rubrum* in einem Entwicklungsprozeß ausprägen kann und infolgedessen zur Rubrum-Gruppe zu zählen ist.

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