

HAIR PENETRATION ABILITY OF VARIOUS DERMATOPHYTES "IN VITRO".

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Growing realization that a given dermatophyte may vary considerably in its morphological properties has stimulated workers to revise taxonomy of this group of keralinophilic fungi. Trichophyton mentagrophytes and T. rubrum are two common dermatophytes with basically distinct cultural characteristics.

Vanbreuseghem (1949) developed an in vitro culture technique for growing dermatophyte on hair. The place of such a technique in the identification of an aberrant form of ringworm fungi was described by Ajello and George (1957). Work has been done in India on human hair penetration (Verma, 1966). The effect of various hair oils, fatty acids on the growth of dermatophytes and their in vitro penetration of human scalp hair (Bose, 1964, Hajini et al 1970) has also been studied.

In our laboratory we examined four important species: T. violaceum, T. schoenleinii, T. rubrum, M. audouini, from 35 positive cultures, for testing their ability as penetrator or non-penetrator of human hair. This preliminary communication is a part of the statistical study of the incidence of T. capitis in Nagpur (Jagtap et al, 1971). We were interested to know whether any of the species isolated, were penetrator or non-penetrator of human hair, hence this present work was carried out.

Material and Methods: Two types of hair in adults (25-35 years) of both sex were taken and hair penetrating ability was tested. The following groups were studied :

1. Five male adults aged 25-35 years having brown soft hair.
2. Five female adults aged 25-35 years having brown soft hair.
3. Five male adults aged 25-35 years having black rough hair.
4. Five female adults aged 25-35 years having black rough hair.

Clippings of hair, about 1 c. m. in length, were placed in Mc-Cartney bottles and autoclaved for 15 minutes at 120°C. Ten ml. of sterile distilled and autoclaved drops of 10% yeast extract were then added to each bottle. Each bottle was inoculated with four fungus species and then incubated at 26°C. Regular weekly examinations were made for four consecutive weeks examining under microscope for fungus penetration of hair after staining samples with lactophenol blue.

Observations and Results: The hair were examined for four consecutive weeks in all the groups. No penetration was observed.

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DISCUSSION

In the present work we have tried to evaluate whether the age and sex of the subject and type of human hair is specific for penetration by the four common species, *T. violaceum*, *T. schoenleinii*, *T. rubrum*, *M. audouini* of dermatophytes. The hair penetration test in two different types of hair, soft brown and rough black in adults in both sexes, was negative with the four different pathogens. The facility with which the numerous species of ringworm fungi invade human hair in vitro requires further study. The importance of the type of the hair employed in the test also remains to be clarified. Williams (1934) claimed that infant hair was more susceptible to fungal attack but Vanbreuseghem (1949-1952) is of the opinion that age and sex of the subject from whom the hair was taken were from this point unimportant. In our series we found that the four main species *T. violaceum*, *T. rubrum*, *T. schoenleinii*, and *M. audouini*, isolated are nonpenetrators of human hair. Trotter and Duggins, 1948 believe that the elasticity, tear resistance and cystein content increase with age. We have not experimented with hair of children but the thickness of hair soft brown or rough black did not make any difference. We conclude that the common prevalent species causing tinea capitis in Nagpur are basically non-penetrators.

SUMMARY

Hair penetration tests were done on human scalp hair (Rough black and soft brown) of adults of both sexes. It appeared that *T. violaceum*, *T. schoenleinii*, *T. rubrum* and *M. audouini* were non-penetrators of human scalp hair

Table No. 1

Type of Hair	Sex	<i>T. violaceum</i>	<i>T. schoenleinii</i>	<i>T. rubrum</i>	<i>M. audouini</i>
Rough black	Male	-	-	-	-
Rough black	Female	-	-	-	-
Soft brown	Male	-	-	-	-
Soft brown	Female	-	-	-	-

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