Propylene Glycol in the Treatment of Tinea Versicolor

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Abstract. Twenty patients with tinea versicolor were treated with propylene glycol 50% in water twice daily for 2 weeks. All of these were cured when seen 2 weeks after the last day of treatment. The patients found the treatment cosmetically attractive and only 2 patients complained of a slight burning sensation in the skin after application of the solution.

Key words: Tinea versicolor; Propylene glycol

Propylene glycol is used primarily as a solvent or keratolytic agent (1, 5), but it is also an active agent *in vivo* and *in vitro* against bacteria (8, 9) and fungi (4). In an earlier study we investigated the antimycotic activity *in vitro* of propylene glycol against *Pityrosporum orbiculare*, *Candida albicans*, and dermatophytes. Propylene glycol inhibited the growth of fungi at concentrations of 3–9%. *P. orbiculare*, the etiological agent of tinea versicolor (2, 3, 6), was inhibited by concentrations of 4–6%.

Propylene glycol is non-toxic when applied to the skin and it has been used safely internally and on the skin for many years (5). It is a colorless, odorless liquid, and miscible with water. In high concentrations it may have an irritant effect on the skin (1, 5).

The aim of the present study was to evaluate the effect of propylene glycol (50% in water) in the treatment of tinea versicolor.

MATERIALS AND METHODS

Twenty patients, 11 females and 9 males, were studied (Table I). Tinea versicolor lesions were localized to the upper part of the trunk as nummular to smaller confluent areas. In 8 patients, lesions were also found on the upper arms. Diagnoses of tinea versicolor were confirmed clinically, under Wood's light, and microscopically. For microscopic studies the tape method described by Keddie et al. was used (7). Scrapes for culture of *P. orbiculare* were not taken, because *P. orbiculare* can be cultured not only from tinea versicolor lesions but also from normal skin (3, X).

The patients applied propylene glycol (50% in water) on the trunk and arms twice daily, with a gauze pad, for 2 weeks. The patients returned for a check-up after 4 weeks, 2 weeks after the last day of treatment.

Table I. *The patients studied in the study of propylene glycol in tinea versicolor*

	Males	Females	Total
Number	9	11	20
Age (year)	27–42	19–50	19–50
Mean (year)	34	29	31
Duration of tinea versicolor (mo.)	6–24	4–24	4–24
Mean (mo.)	14	9	11

RESULTS

All of the 20 patients returned for their check-up, and all were cured when judged clinically, under Wood's light, and microscopically. As after other treatments, depigmented skin changes were present in some patients, but no fluorescence was seen under Wood's light. Material for microscopy was taken from several earlier affected areas, but no fungus was found on any of the patients.

Two patients complained of a slight burning sensation when they applied the propylene glycol solution, but not to the extent that treatment had to be interrupted. When these patients were seen, 2 weeks after the last day of treatment, no objective signs of skin irritation were noted.

DISCUSSION

Propylene glycol is not only a good keratolytic agent (1), but also an effective antimicrobial agent (4, 8). This study shows that propylene glycol is very effective in the treatment of tineca versicolor, with a 100% cure rate. It has only negligible side effects in a 50% solution in water. The good clinical results reflect the high *in vitro* activity of propylene glycol against *P. orbiculare*, as we found in an earlier study. In this study the inhibitory concentrations of propylene glycol against *P. orbiculare in vitro* were 4–6%. In high concentrations propylene glycol may have an irritant effect on the skin (1, 5), but we have only 2 patients who complained of side effects. We used propylene glycol in a 50% solution in water, but according to our *in vitro* results, it may be possible to use a lower concentration.

Propylene glycol is cheap and its keratolytic effect is also an advantage in the treatment of many fungal diseases. Its low toxicity makes it possible to treat large areas of the skin surface, often desirable in tinea versicolor, without any risks.

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