# PHOTOCHEMOTHERAPY IN PSORIASIS WITH SPECIAL REFERENCE TO PUVA
## (A short clinical trial)

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**Summary**

Efficacy of psoralens and long wave UVL therapy in psoriasis has been reported recently. The pharmacologic basis is said to be the inhibition of DNA synthesis and cell division. A clinical trial in this regard has been made in 30 cases of psoriasis. The observations have been reported along with review of relevant literature. The findings on the whole indicate a reasonable promise having several advantages in the management of psoriasis.

Interaction of light and drug resulting in a beneficial effect on a disease process has been denoted as photochemotherapy[1] and photochemotherapy with psoralen and long wave ultraviolet (UVA - band) radiation as PUVA treatment. The psoralens are known to have maximum photoactivation wavelength in the middle of the UVA band (i.e. 360 nm)[2]. It is also known that long wave UV light (315 - 380 nm) is much more abundant in sunlight than in artificial light[3].

Previously conventional UVL in the range of 290 - 320 nm alone or in combination with coal tar preparations, chrysarobin, dithranol, cignolin etc. have been widely used but because of various limitations and hazards proved unsatisfactory. Corticosteroids, cytostatic agents and antimetabolites (e.g. methotrexate, azaribine, hydroxyurea) either topically or systemically, as subsequently introduced, also could not prove satisfactory and safe because of serious complications and risks. Thus, the treatment of psoriasis virtually remains a challenge.

Arising out of the common experience that psoriasis improves in summer and sunny climate, much interest has recently been evinced on the scope of long wave U - V radiation fortified with psoralens, the potent photosensitizers in the treatment of psoriasis. Our knowledge regarding inhibition of epidermal DNA synthesis consequent to photochemical reaction of psoralens has also contributed largely in building up the idea.

The first report using systemic psoralen, in place of topical application as used earlier, along with UVA radiation came out in 1974 from Boston[1]. The next interesting report came from Vienna in 1975[4]. Both these groups used 8 - methoxypsoralen (8 MOP) in preference to trimethylpsoralen (TMP) because of its relatively more effectiveness in producing erythema (TMP more effective in producing pigmentation)[2]. While encouraging results have been claimed by most of the workers

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including Wachtl[5], there are contradictory views too[3].

In this context a first hand clinical screening with PUVA utilizing sunrays exposure as the source of UVA has been undertaken. An increasing number of patients of uncomplicated psoriasis vulgaris are being put under this trial, operated since about one year. Here it is proposed to present our impression as observed in first 30 such cases.

## Material and Methods

Of the thirty patients included in this series 23 were males and 7 females, having no other systemic ailment, neither any history of photosensitivity. Their ages varied between 13 and 54 years. Duration of the disease varied from 1 to 17 years with usual history of recurrences and aggravation during winter.

Occupation of none of these patients involved any risk of excess U - V radiation or excess exposure to sunlight.

Initially 8-methoxy psoralen (Psorline-P) 10 mgm per day for the first 10 days, increased to 20 mgm per day for the next 10 days, and reaching finally 30 mgm per day were administered in a single dose nearly 2 hours before exposure to sunlight for a period starting from 10 minutes daily for one week, and increasing by 5 minutes per week till 30 minutes' target was reached.

Each patient was kept under observation with clinical evaluation at weekly interval for a minimum period of 12 weeks till the final opinion is formed regarding effectiveness of the treatment in the individual case.

Excepting bland emollient ointment nothing was advised for topical application.

Additional changes in the skin included some degree of hyperpigmentation of diffuse nature and not necessarily restricted to psoriatic patches.

Adverse reaction or intolerance to this treatment indicating withdrawal did take place in none. However, variable degree of generalised pruritus was complained of by 15 patients while undergoing the trial. The pruritus was controlled with the help of antihistaminics.

## Observation

8-Mop and Sunray Therapy in 30 patients with Psoriasis

| Regression of Lesions | Time | No. of cases |
|---|---|---|
| 1. Impressionable Change | Within first 3 weeks | Nil |
| 2. Complete or almost complete clearance | Within 3 to 6 weeks | 4 |
| | Within 6 to 9 weeks | 6 |
| | Within 9 to 12 weeks | 5 |
| 3. Moderate Improvement | Within 3 to 12 weeks | 8 |
| 4. Marginal or no Improvement | Within 3 to 12 weeks | 7 |

## Discussion

As has been discussed elaborately by earlier observers specially Parrish and his colleagues[1] the basis of this therapy is the capability of UVA and psoralens combinedly in inhibiting DNA synthesis and cell division. The psoralens are potent photosensitizers in the presence of longwave U-V rays. The photosensitizing property is related to the ability of the photoexcited psoralen molecule (triplate state) to transfer the observed U - V energy to DNA. In this photochemical reaction psoralen covalently binds to DNA, forming nonfunctional single-strand photoadducts with thymine bases and interstrand cross-links (bifunctional adducts) between opposite pyrimidine base pairs; the formation of these $C_4$-cyclobutane

photoadducts of psoralen and pyrimidine, presumably leads to inhibition of DNA synthesis.

It is well known that orally administered methoxalen can produce photosensitization after exposure to sunlight. In Western countries regular utilization of sun rays is a practical problem and hence artificial sources for long - wave UVA, particularly the recently designed black lamp chamber and not the conventional U-V lamp emitting UVB rays is being utilised[6].

In the present study direct sunrays exposure was utilised. For obvious practical difficulties, no attempt was made to include routine control studies. The comparative merits of UVA therapy alone and PUVA therapy had already been studied by others who unequivocally admitted the effectiveness and supremacy of PUVA.

The observations of this short clinical trial, although not conclusive, adequately indicate the efficacy and high rate of acceptance of PUVA therapy in the treatment of psoriasis. The therapy is safe and not too costly; it does not require frequent laboratory investigations for continuation of treatment and has minimum therapeutic risks. Thus in all respects, the treatment with PUVA utilising sunrays appears to be a more acceptable one in comparison to other modes of treatment advocated for psoriasis. Of course, the findings need to be substantiated in larger series by other observers in our country.

**References :**

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