EFFECTIVENESS OF A BROADSPECTRUM SUNSCREEN IN THE PREVENTION OF DRUG-INDUCED PHOTOTOXIC REACTIONS

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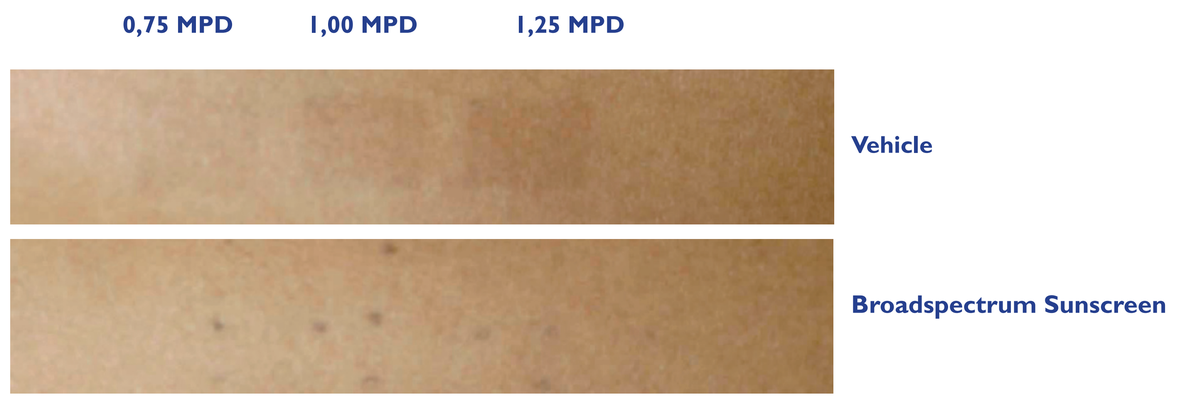
INTRODUCTION

Many drugs have been incriminated in phototoxic and photoallergic responses.
The implicated spectrum for most of the drug induced photosensitivity is in the UVA range (320-400 nm).

The aim of this intra-individual, randomized comparative study was to assess the role of a broadspectrum sunscreen (versus vehicle) in volunteers taking systemic medication known to induce phototoxicity (i.e. doxycycline or chlorpromazine).

MATERIAL AND METHOD

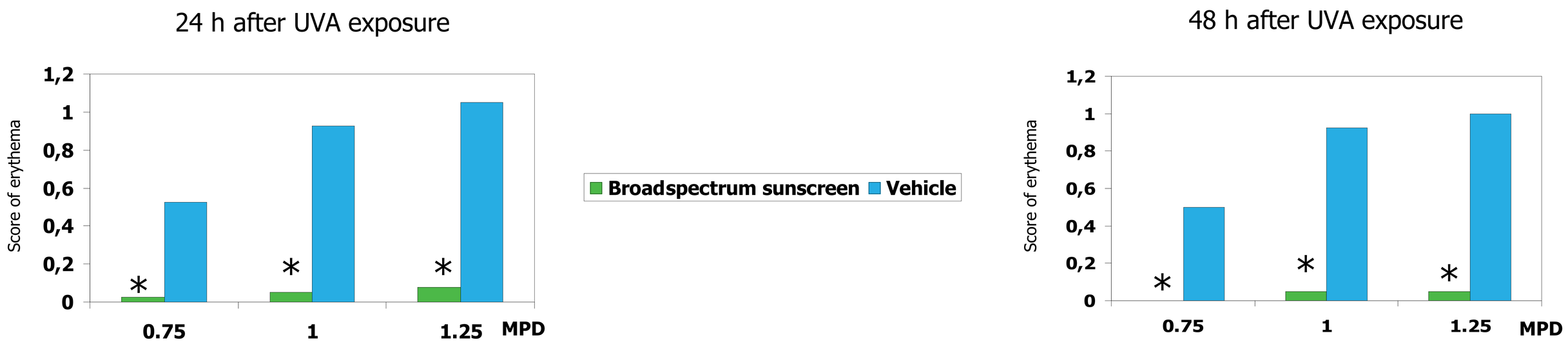
This study was carried out on 20 volunteers: 18 (23 - 33 years old, 12 females and 6 males) taking 100 mg of doxycycline hydrochloride for acne vulgaris per day during 60 days, 1 male (69 years old) taking dacarbazine (DTIC) at 200 mg per day during periods of 90 days for malignant melanoma and 1 male (85 years old) taking 50-100 mg of chlorpromazine per day during 3 years for insomnia. All these medications are known to induce phototoxicity.



The Minimal Phototoxic Dose (MPD) was determined on the back of each volunteer, 24 hours after exposure to increasing doses of UVA (FL-20BLB, Toshiba). The 20 positive patients were either treated (2mg/cm^2) by a broadspectrum sunscreen (SPF 50+, UVA-PF 28 determined by the persistent pigment darkening (PPD) method) or its vehicle. The treated zones were exposed, 15 minutes after application, on 3 sub-sites with 3 UVA doses corresponding to 0.75, 1 and 1.25 MPD. The exposed areas were assessed 24 and 48 hours after exposure by colorimetry (CR 200 Chromameter, Minolta) and by a visual score to determine the degree of erythema.

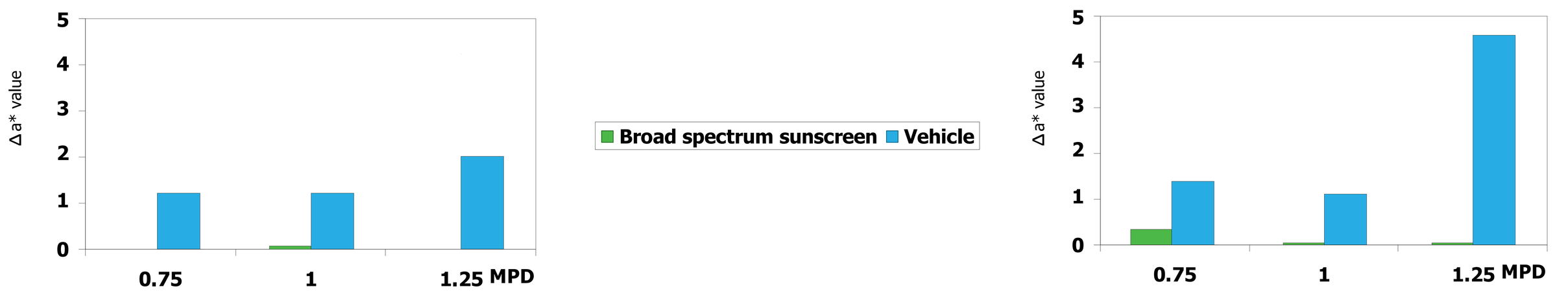
RESULTS

For the 0.75 MPD UVA dose, on the protected area, only one reaction (a "very light" erythema) was observed 24 hours and no reaction 48 hours after exposure, whereas "very light" to "light" erythema was detected on the vehicle treated area in 14 and 3 patients, respectively. For the 1.25 MPD, only "very light" erythema was noticed on the protected area in 3 patients, whereas "light" to "mild" erythema was observed on the vehicle treated area in 18 and 1 patients, respectively.



Score of erythema = 0: None ; 0,5: Very Light ; 1: Light ; 2: Mild. *p<0,0003 versus vehicle treated area.

All these results were reinforced by colorimetric evaluations.



CONCLUSION

This study clearly demonstrates, in addition to good tolerance, the benefits of using an effective and correctly applied broadspectrum sunscreen to prevent drug-induced phototoxic reactions.

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