

# EFFECT OF SUNSCREEN ON METVIX ABSORPTION IN EX VIVO HUMAN SKIN

H. Osman-Ponchet, K. Sevin, A. Gaborit, G. Bouvier, P. Comby, B. Rutzy

METABOLISM & PHARMACOKINETICS UNIT, PRECLINICAL DEVELOPMENT, GALDERMA R&D, SOPHIA ANTIPOLIS, FRANCE

## BACKGROUND

Metvix® cream contains methyl aminolevulinate (MAL). Conventional Metvix® photodynamic therapy (PDT) has proved efficacious for the treatment of certain types of actinic keratoses and basal cell carcinomas. However, pain related to illumination during conventional Metvix®-PDT is a severe side effect. Replacing conventional PDT by natural daylight PDT may represent a new strategy to reduce pain related to illumination. During exposure to daylight (DL), subjects are advised to utilize a sunscreen on non-treated areas. However, sunscreen may change skin absorption of MAL, and therefore the safety and efficacy of Metvix. The main objective of this work was to evaluate the interaction between sunscreen and Metvix by evaluating the effect of sunscreen on MAL absorption in ex vivo human skin.

## METHODS

Freshly excised human skin samples from three different donors maintained in organoculture on Transwell inserts were firstly treated with sunscreen (Cetaphil SPF30; 10µL/cm<sup>2</sup>) for 15 minutes. Afterwards, skin samples were treated with Metvix cream containing [<sup>14</sup>C]-MAL (100 mg/cm<sup>2</sup>) for 2.5 hours. Skin samples treated with Metvix cream only was used as control. Incubations were performed in cell incubator set at 37°C and 5% CO<sub>2</sub>. At the end of incubation period, radioactivity related to [<sup>14</sup>C]-MAL was measured by liquid scintillation counting in skin and receptor fluid samples. Each condition was performed in triplicate.



## RESULTS

Figure 1: Chemical structure of [<sup>14</sup>C]-MAL and HPLC-RAD profile of Metvix formulation containing [<sup>14</sup>C]-MAL

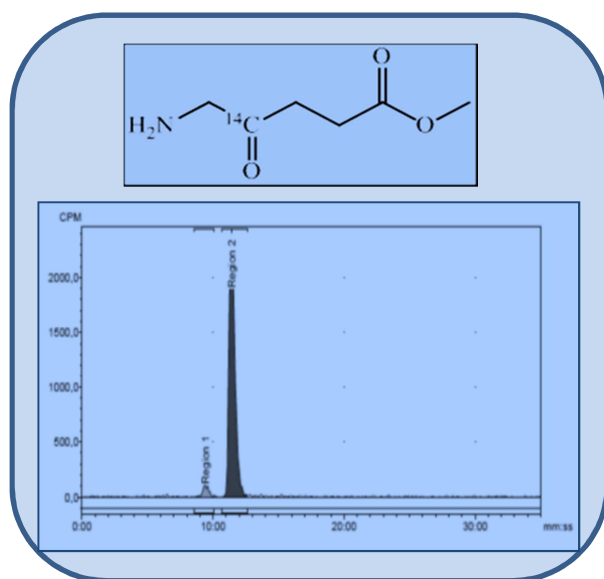
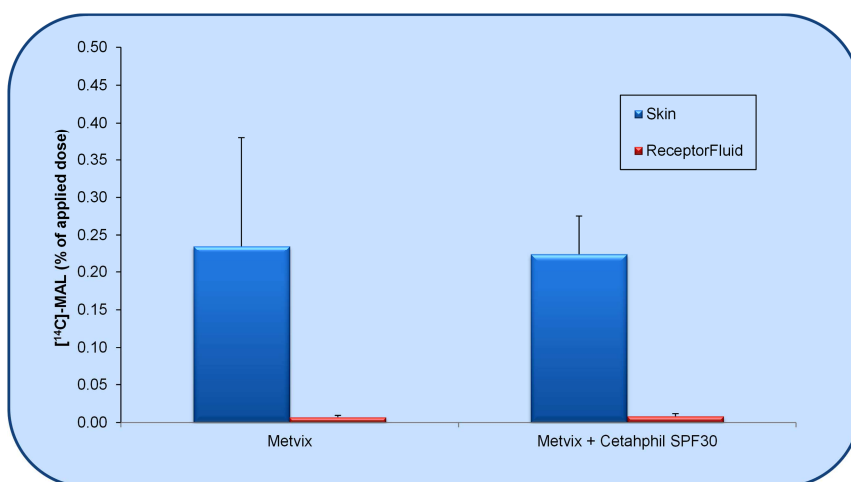


Figure 2: Absorption and distribution of [<sup>14</sup>C]-MAL in ex vivo human skin expressed in % of the applied dose. Data represent mean +/- SD of three donors in triplicate (N = 9)



## DISCUSSION

- Mass balance values ranged between 91% and 115% in all skin samples.
- The mean absorbed dose of [<sup>14</sup>C]-MAL was very low (0.007% - 0.010% of the applied dose) in both groups
- The mean dose of [<sup>14</sup>C]-MAL penetrated into the skin was low (0.22 % - 0.24%) in both groups and was more than 20 times the absorbed dose.
- 15 minutes pretreatment with Cetaphil SPF30 had no significant effect on MAL skin absorption or distribution.

## CONCLUSION

No statistically significant effect of the sunscreen was seen on [<sup>14</sup>C]-MAL absorption and distribution in ex vivo human skin. This indicates that there was no significant interaction between the sunscreen and Metvix in the in vitro conditions. Therefore, Cetaphil SPF30 is unlikely to modify the safety and efficacy of Metvix.