Comparison of whitening effect of various skin whitening ingredients in guinea pigs

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There is growing interest in models of damaged or compromised skin in vivo in minipigs. For such models, methods must be defined for damage or compromise of the skin and for measuring the degree of damage caused. Tape stripping offers a convenient method for inducing reproducible epidermal damage while trans-epidermal water loss (TEWL) offers a measure of the degree of damage to the epidermal barrier. We have compared different methods for measurement of TEWL. In this study we evaluated TEWL on normal skin and tape-stripped skin at 4 different locations on 2 minipigs. TEWL was measured using two different approaches, a conductance meter and open chamber TEWL meter. During the test period handling and use of both the conductance meter and the open chamber TEWL meter was found to be easy and straightforward. Both meters were found suitable for measuring water loss from the skin of minipigs in a laboratory set-up. After tape-stripping, both meters could observe increased water loss and water loss increased with the number of tape stripping occasions. A histopathological evaluation was also undertaken to determine the extent of epidermal damage and the amount of epidermis removed depending on the number of strips applied. We conclude that tape stripping, a method that is commonly used for removal of part or all of the epidermis, can be used both reliably and accurately in minipigs to model compromised or damaged skin and that TEWL offers a convenient method for quantifying the extent of epidermal barrier damage.