

## **Preliminary Study: Non-invasive Measurement of Skin Microenvironment Changes Induced by Topical Corticosteroids, Cyclosporine and Tacrolimus in Dogs**

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Topical anti-inflammatory drugs have been used very common in various inflammatory skin disorders, especially atopic dermatitis. However, it is little known about the effect of these drugs in canine skin barrier function. The aim of the present study was to evaluate the effect of 0.05% clobetasol-17-propionate, 0.1% tacrolimus, 0.2% cyclosporine and betamethasone on normal canine skin using non-invasive methods. Five beagles were involved and skin of the back of each dog was topically applied with those drugs once a day for 9 days. Transepidermal water loss (TEWL), skin hydration, skin pH and thickness were assessed every day during experimental periods. TEWL was significantly increased by 0.05% clobetasol-17-propionate and cyclosporine on 9 days ( $p < 0.05$ ). Skin pH was significantly decreased by cyclosporine and tacrolimus on 6 days and 9 days, respectively ( $p < 0.05$ ). Betamethasone gradually decreased skin pH until 9 days. On 6 and 9 days skin hydration was significantly increased in cyclosporine and tacrolimus, respectively ( $p < 0.05$ ). These results showed that the topically applied steroid and cyclosporine induced skin barrier impairment to the contrary of their anti-inflammatory effect in canine skin. We suggest that incase of topical use of anti-inflammatory agents, the simultaneous use of emollient or moisturizer may be needed for the conservation of skin barrier function in canine skin.

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