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Development of a cumulative irritation model for incontinence-associated dermatitis.

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Abstract

Incontinence-associated dermatitis (IAD) is a painful yet preventable form of cumulative skin irritation prevalent amongst those with limited movement. Consequently, it has a significant impact on the quality of life for those affected as well as substantial cost implications. Prevention and intervention is typically through good skin hygiene regimes and regular use of barrier products. In this paper, we describe the development of an in vivo model of IAD in healthy volunteers by occluded application of alkaline synthetic urine to the volar aspect of volunteer's forearms for 6 h per day over a five-day period to reproduce the moist and irritant conditions causative of IAD. Irritation was assessed and quantified on a daily basis by a series of non-invasive biophysical measurements and compared to a contralateral saline-treated (control) site. Dermal irritation was assessed by subjective (visual) and objective measurements (laser Doppler and polarisation spectroscopic imaging, infrared thermography, skin reflectance spectroscopy, transepidermal water loss and skin surface pH). The provocation of reproducible, cumulative skin irritation was successfully demonstrated and quantified. This five-day model of irritation is considered appropriate for the initial clinical assessment of topical products to prevent or treat IAD.

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