

Skin pH in atopic dermatitis

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ABSTRACT

Atopic dermatitis is being recognized as a skin barrier disorder. Filaggrin loss of function mutation has been discovered as one of the key genetic disorders in the pathogenesis of atopic dermatitis. It can lead to barrier dysfunction, increased epidermal water loss and is associated with the atopic march. However, it is important to note that filaggrin does not account for the entire pathogenesis of atopic dermatitis and that the Asian population manifests a more diverse and heterogenous filaggrin mutation as compared to the Caucasian population. Atopic dermatitis (AD) phenotypes also differ among the races, it is found that the Caucasian AD is associated with classical elevated Th2 and Th22 inflammation whereas the Asian AD phenotype closely resembles pediatric AD in which there are elevated Th2, Th22 and Th17 inflammation. The parakeratosis in Asian AD also mimics that which is found in psoriasis, the difference being the absence of Th1 inflammation that is found in psoriasis. Future advances in the research on biomarkers in AD will guide and enable us to use more effective targeted therapy based on the AD phenotype. Normal skin pH is in the acidic range. The skin pH in patients with AD has been found to be in the neutral to alkaline state, and this can be partially attributed to decreased acidic filaggrin breakdown products. We are now starting to recognize the importance of an acidic skin pH mantle in skin barrier homeostasis. Disruption of the skin pH to a more alkaline status will lead to increased skin protease activity causing barrier disruption, itch and decreased antimicrobial defence. Studies have shown that addition of topical acids to reduce skin pH can reduce eczematous inflammation. In particular, lactobionic acid application has been shown to inhibit cutaneous serine protease activity, increase antimicrobial peptide expression and halt eczematous inflammation. More studies are being conducted into the discovery of novel skin pH lowering methods to improve clinical outcomes. Ceradan Advance is a patented novel barrier cream that contains zinc lactobionic acid with a lactobionate buffer to sustainably lower skin pH. Restoration of the disrupted AD skin barrier and lowering of the skin pH should lead to better clinical outcomes.