

## Neutralizing interleukin-13 increases skin microbial diversity: results from a Phase 3, randomized, double-blind, placebo-controlled trial of tralokinumab in adult patients with atopic dermatitis

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**Background:** A healthy skin barrier supports the growth of commensal bacteria, which protect the host from pathogenic bacteria and virulence factors. In atopic dermatitis, recent studies have pointed to a lack of microbial diversity in both lesional and non-lesional skin. Dysregulation of the skin microflora in atopic dermatitis is believed to be influenced by epidermal barrier disruption and Th2-driven inflammation, in which interleukin (IL)-13 plays a major role.

Tralokinumab is a fully human monoclonal antibody that has proven efficacious in improving the signs and symptoms of moderate-to-severe atopic dermatitis by neutralizing the IL-13 cytokine. We investigated the change in microbial diversity in lesional skin of atopic dermatitis patients treated with tralokinumab in a Phase 3 clinical trial (ECZTRA 1; NCT03131648).

**Methods:** Patients with moderate-to-severe atopic dermatitis were randomized 3:1 to subcutaneous tralokinumab 300 mg or placebo every 2 weeks for 16 weeks. Skin swabs collected at baseline and after 8 weeks and 16 weeks of treatment were assessed for microbial diversity by DNA sequencing of 16S ribosomal RNA.

**Results:** Treatment with tralokinumab was associated with an increase in skin microbial diversity compared with placebo.

**Conclusions:** The increase in skin microbial diversity observed with tralokinumab treatment supports the notion that neutralization of IL-13 contributes to improving the hallmarks of atopic dermatitis by breaking the cycle of itching, scratching, skin barrier dysfunction, and immune-mediated inflammation, thereby shifting the microbial diversity on atopic dermatitis lesional skin towards a commensal flora. It remains to be elucidated whether the lack of microbial diversity in atopic dermatitis is a net result of an epidermal barrier defect or a cause of barrier dysfunction and inflammation.

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