confounders include increased exposure to tobacco smoke and increased respiratory symptoms before the study in the children randomly assigned to the probiotic group. Additional studies are required to assess probiotic use in children with a personal or family history of atopic disease.

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The Efficacy and Safety of a Chinese Herbal Product (Xiao-Feng-San) for the Treatment of Refractory Atopic Dermatitis: A Randomized, Double-Blind, Placebo-Controlled Trial

Cheng HM, Chiang LC, Jan YM, Chen GW, Li TC. *Int Arch Allergy Immunol.* 2011;155(2):141–148

PURPOSE OF THE STUDY. To determine if the Chinese herbal product Xiao-Feng-San (XFS) taken orally could significantly improve symptoms of severe intractable atopic dermatitis.

STUDY POPULATION. A total of 71 Taiwanese subjects (age range: 8.4–22.6 years [median: 13.1 years]) with history of severe, refractory atopic dermatitis and poor response to eczema medications (topical steroids, oral antihistamines) were enrolled.

METHODS. This was a prospective, double-blind, placebo-controlled trial in which patients were randomly assigned at a ratio of 2:1 to receive XFS or placebo over 8 weeks. There were 47 (median age: 12.2 years) given XFS and 24 (median age: 13.6 years) given placebo. Participants were matched according to gender, height, weight, BMI, age, duration of illness, and symptom scores. Patients were given varying doses depending on age. Laboratory studies were performed and total lesion score, erythema score, surface damage score, pruritis score, and sleep scores were calculated at 4-week intervals up to 12 weeks.

RESULTS. A total of 56 subjects completed the entire study. There was a statistically significant improvement in total lesion scores among those in the treatment group compared to those of the placebo group (79.7 ± 5.8% vs 13.5± 7.64%; $P < .001$). There was also statistically significant improvement in all symptom scores for those on treatment compared to those on placebo. Four weeks after the treatment was discontinued, the mean improvement in the clinical lesion score for the XFS group was still significantly better than that of the placebo group. Patients reported no adverse effects except unpalatability for some. Treatment did not affect total serum immunoglobulin E level, eosinophil counts, or interleukin 5, interleukin 13, or eosinophil cationic protein levels.

CONCLUSIONS. The traditional Chinese herbal medication XFS might be an alternative choice of therapy for severe, refractory, extensive, nonexudative atopic dermatitis.

REVIEWER COMMENTS. Severe and widespread atopic dermatitis can be frustrating to treat for patients, parents, and physicians. Patients often ask their physicians if there are alternative approaches to controlling atopic diseases. XFS is a common Chinese herbal preparation of 12 herbs, some with known anti-inflammatory effects, that might provide a complementary option for adults and children who require systemic steroids to control their eczema flares. However, more scientific evaluation of XFS to determine its mechanism of action, safety profile, applicability, and palatability need to be considered before widespread use is accepted.

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PRIMARY IMMUNODEFICIENCY, HIV, AND INFECTIOUS DISEASES

Chronic Mucocutaneous Candidiasis in Humans With Inborn Errors of Interleukin-17 Immunity

Puel A, Cypowyj S, Bustamante J, et al. *Science.* 2011; 332(6025):65–68

PURPOSE OF THE STUDY. Chronic mucocutaneous candidiasis disease (CMCD) is characterized by recurrent or persistent infections of the skin, nails, and oral and genital mucosa caused by *Candida albicans* and sometimes *Staphylococcus*. Previous studies have shown that interleukin 17 (IL-17) receptor-deficient mice were more susceptible to oropharyngeal candidiasis and staphylococcal infections of the skin. The purpose of this study was to assess if findings in the mouse model also applied to humans.

METHODS. Candidate gene sequencing was performed on a child with *C albicans* in the neonatal period and *Staphylococcus aureus* dermatitis at 5 months of age and a family from Argentina with autosomal dominant pattern of CMCD inheritance. Sequences of IL-17–related genes and receptors from affected people were compared with those of family members and controls. Additional experiments were performed by incubating fibroblasts from an affected child with recombinant IL-17A and IL-17F homodimers and heterodimers.

RESULTS. The initial child was found to be homozygous for a mutation in the *IL17RA* gene that was not found in any of the controls. The IL-17RA protein was not detected on the surface of fibroblasts, $CD4^+$ T cells, $CD8^+$ T cells, or monocytes from the patient. The patient's fibroblasts did not respond to any of the 3 IL-17 cytokines. In the family

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