

Alternative Therapies in Atopic Dermatitis Care: Part 2

From natural oils to probiotics, here's what you need to know about alternative treatments.

By Peter A. Lio, MD

In last month's article covering alternative therapies for the treatment of atopic dermatitis (available online at PracticalDermatologyPeds.com), I examined Traditional Chinese Medicine (TCM), acupuncture, homeopathy, hypnosis and biofeedback. In this second and final entry on alternative therapies for atopic dermatitis, I will explore some other, less-organized therapies, including natural oils, probiotics, and vitamins.

Natural Oils

Dry skin and impaired barrier function are defining characteristics of atopic dermatitis (AD). It is thus not surprising that the application of oils continues to be a popular alternative therapeutic approach. Indeed, the very act of moisturizing is a mainstay of treatment, although in Western medicine, synthetic and petroleum-based products seem to dominate the recommendations. There are some very interesting plant oils that hold promise and may work in more ways than one.

Sunflower seed oil (*Helianthus annuus*) has been studied and is notable for having both anti-inflammatory and barrier restoring effects.¹ Its major lipid is linoleic acid, which is thought to activate peroxisome proliferative-activated receptor-alpha, leading to decreased inflammation in the skin.² At the same time, there is evidence that sunflower seed oil enhances natural lipid production, perhaps because the linoleic acid is akin to ceramide precursors.³ Finally, in a remarkable study of premature neonates, sunflower seed oil was shown to significantly reduce deaths from infection—presumably by enhancing their poorly-developed skin

barrier function—in an incredibly affordable way.⁴

Evening primrose oil (*Oenothera biennis*) also contains high levels of gamma linoleic acid, as well as omega-6 fatty acids.⁶ It has had some promising results with one randomized controlled trial of oral evening primrose oil showing improvement in 96 percent of the treatment group vs. only in 32 percent of the placebo group.⁷ However, in aggregate, the studies have been mixed, with an overall outlook that this is either not very helpful or only helpful in a select group.

Coconut oil (*Cocos nucifera*) has long been used to treat atopic dermatitis in folk medicines. It appears to have some very promising properties when studied, as well: it is not only a good emollient, but also has fairly impressive antibacterial qualities. One study found that topically applied coconut oil decreased staphylococcal colonization by 95 percent in patients with atopic dermatitis when applied twice daily for four weeks.⁸ With our increasing understanding of the role of staphy-

Take-Home Tips. Some alternative approaches may hold some promise in the treatment of atopic dermatitis; conventional medicine still holds the most answers for AD. Sunflower seed oil is at the very least safe and may be able to help with AD via several mechanisms. Coconut oil may be useful to decrease bacterial colonization. These are relatively inexpensive and easy to obtain. Despite some impressive findings for probiotics, other studies have not shown benefit or prevention and many questions remain about dosing, timing, and the appropriate type. It is reasonable to consider oral supplementation of vitamin D in patients with AD, however, topical vitamin D (and its analogues) seem to actually worsen AD. ●

Botanicals At-A-Glance

Sunflower seed oil (*Helianthus annuus*)

- Both anti-inflammatory and barrier restoring effects
- Major lipid is linoleic acid
- May enhance natural lipid production

Coconut oil (*Cocos nucifera*)

- Long used to treat AD in folk medicines
- A good emollient
- Fairly impressive antibacterial qualities

Evening primrose oil (*Oenothera biennis*)

- Contains high levels of gamma linoleic acid, as well as omega-6 fatty acids
- Some promising results
- In aggregate, studies have been mixed



lococcal colonization of the skin in AD, using such an agent may not only help prevent infection, but could also decrease the antigenic stimulation from the colonization and improve the disease. Further studies are necessary, but there could be a role for coconut oil in some patients with AD.

Taken together, these data suggest that sunflower seed oil is at the very least safe, even for the youngest of patients, and has excellent plausibility for being able to help with AD via several mechanisms. Coconut oil may be useful to decrease bacterial colonization in a more natural way. Additionally, these are relatively inexpensive and fairly easy to obtain. I have tried to integrate both of these into my practice and have had some success, though there is always the lingering concern that with any food product, prolonged application to the skin could potentially sensitize an individual. This concern has been raised with topical oatmeal based products as well.⁵

Probiotics

The idea that “balancing” the immune response could be performed by exposure to certain bacteria is compelling. Indeed, an early study showing that neonates given *Lactobacillus rhamnosus* GG developed AD only half as much as the control group created a stir in the AD community.⁹ A randomized controlled trial in 2005 demonstrated an equally impressive finding: twice daily administration of probiotics to children with established moderate or severe AD resulted in significant improvement over placebo.¹⁰

However, despite some impressive findings, other studies have not shown benefit or prevention, and many questions remain about optimal dosing, timing, and the appropriate type of probiotic.⁶ Although probiotics are probably safe, one trial did report an increased rate of episodes of bronchitis in treated patients, curbing enthusiasm and prompting caution until more is understood about probiotics in the setting of atopic diseases.¹¹

Vitamins

Vitamin D has been an increasingly hot topic for the past several years, with proposed benefits from cancer prevention to immune regulation. Phototherapy with narrowband UVB light has long been known to help AD and has been shown to significantly increase levels of vitamin D in treated patients.¹² Perhaps the vitamin D itself is responsible for some of the improvement.

A small but impressive study from Sidbury et al. demonstrated significant improvement in 80 percent of children given vitamin D supplementation versus only in 17 percent of the controls.¹³ Interestingly, this was demonstrated in a group of patients whose eczema was reported to worsen during the winter months, suggesting that perhaps a relative deficiency of vitamin D was partly responsible for their disease. Corroborating this was a more recent study that found a significant inverse correlation between vitamin D level and eczema severity.¹⁴ Given these data and the safety of vitamin D, it is reasonable to consider oral supplementation of vitamin D in patients with AD.

Alternative Therapies Proposed for AD

Systems

- TCM and Acupuncture
- Homeopathy
- Hypnosis and biofeedback

Non-systems

- Probiotics
- Evening primrose oil
- Coconut oil
- Sunflower seed oil
- Oral vitamin D
- Vitamin B12

It is interesting to note, however, that topical vitamin D (and its analogues) while helpful for psoriasis, seem to actually worsen AD. A patch test study found what appeared to be an irritant reaction that aggravated the skin of AD patients.¹⁵ Another report suggested that thymic stromal lymphopoietin (TSLP) is induced by topical vitamin D analogues which in turn triggers Th2 inflammation and can flare AD.¹⁶ That said, a report from 2005 using one formulation demonstrated good improvement in hand and foot eczema, suggesting that some combination of formulation and eczema subtype could allow for effective treatment.¹⁷

Vitamin B12 (cobalamin) has been identified as an inhibitor of inducible nitric oxide synthase, an important step in an inflammatory pathway that may initiate flares of AD.²⁰ A randomized controlled trial of topical vitamin B12 twice daily for eight weeks revealed significant improvement on the treated side vs. placebo.¹⁸ Another study in children similarly found that the topical B12 improved the skin significantly more than placebo at two and four weeks and reported good tolerability.¹⁹ There may well be a place for a topical vitamin B12 preparation in the future of eczema treatment, either as a monotherapy, or perhaps, integrated with another agent.

Conclusion

While some of the alternative approaches to medicine explored here may hold promise in the treatment of atopic dermatitis, conventional medicine still holds the most answers for AD. But since conventional medicine does not hold *all* the answers, knowing about these alternatives is important.

There may yet be breakthroughs that come via these means, but for now their potential remains unrealized. ■

Dr. Lio does not have any relevant relationship with industry. He is a member of the American Academy of Medical Acupuncture.

Peter A. Lio, MD is a Clinical Assistant Professor of Dermatology at the Feinberg School of Medicine of Northwestern University. He is in private practice at Dermatology & Aesthetics of Wicker Park in Chicago, IL.

1. Eichenfield LF, McCollum A, Msika P. The Benefits of Sunflower Oleodistillate (SOD) in Pediatric Dermatology. *Pediatr Dermatol.* 2009 Nov;26(6):669-75.
2. Staumont-Sallé D, Abboud G, Brénuoch C, et al. Peroxisome proliferator-activated receptor alpha regulates skin inflammation and humoral response in atopic dermatitis. *J Allergy Clin Immunol.* 2008 Apr;121(4):962-8.e6.
3. Msika P, De Belilovsky C, Piccardi N, et al. New emollient with topical corticosteroid-sparing effect in treatment of childhood atopic dermatitis: SCORAD and quality of life improvement. *Pediatr Dermatol.* 2008 Nov-Dec;25(6):606-12.
4. Lefevre A, Shillcutt SD, Saha SK, et al. Cost-effectiveness of skin-barrier-enhancing emollients among preterm infants in Bangladesh. *Bull World Health Organ.* 2010 Feb;88(2):104-12.
5. Boussault P, Léauté-Labrèze C, Saubusse E, et al. Oat sensitization in children with atopic dermatitis: prevalence, risks and associated factors. *Allergy.* 2007 Nov;62(11):1251-6.
6. Lee J, Bielory L. Complementary and alternative interventions in atopic dermatitis. *Immunol Allergy Clin North Am.* 2010 Aug;30(3):411-24.
7. Senapati S, Banerjee S, Gangopadhyay DN. Evening primrose oil is effective in atopic dermatitis: a randomized placebo-controlled trial. *Indian J Dermatol Venereol Leprol.* 2008 Sep-Oct;74(5):447-52.
8. Verallo-Rowell VM, Dillague KM, Syah-Tjundawan BS. Novel antibacterial and emollient effects of coconut and virgin olive oils in adult atopic dermatitis. *Dermatitis.* 2008 Nov-Dec;19(6):308-15.
9. Kalliomaki M, Salminen S, Arvilommi H, et al. Probiotics in primary prevention of atopic disease: a randomised placebo-controlled trial. *Lancet* 2001;357(9262): 1076-9.
10. Weston S, Halbert A, Richmond P, et al. Effects of probiotics on atopic dermatitis: a randomized controlled trial. *Arch Dis Child* 2005;90(9):892-7.
11. Kopp MV, Hennemuth I, Heinzmann A, et al. Randomized, double-blind, placebo-controlled trial of probiotics for primary prevention: no clinical effects of Lactobacillus GG supplementation. *Pediatrics* 2008;121(4):e850-6.
12. Cicarma E, Mørk C, Porojnicu AC, et al. Influence of narrowband UVB phototherapy on vitamin D and folate status. *Exp Dermatol.* 2010 Aug;19(8):e67-7
13. Sidbury R, Sullivan AF, Thadhani RI, et al. Randomized controlled trial of vitamin D supplementation for winter-related atopic dermatitis in Boston: a pilot study. *Br J Dermatol.* 2008 Jul;159(1):245-7. Epub 2008 Jul 1.
14. Peroni DG, Piacentini GL, Cametti E, et al. Correlation between serum 25 (OH)-vitamin D levels and severity of atopic dermatitis in children. *Br J Dermatol.* 2010 Nov 18.
15. Fullerton A, et al. Patch test study with calcipotriol ointment in different patient groups, including psoriatic patients with and without adverse dermatitis. *Acta Derm Venereol.* 1996 May;76(3):194-20.
16. Feily A, Namazi MR. Vitamin A + D ointment is not an appropriate emollient for atopic dermatitis. *Dermatitis.* 2010 Jun;21(3):174-5.
17. Egawa K. Topical vitamin D3 derivatives in treating hyperkeratotic palmoplantar eczema: a report of five patients. *J Dermatol.* 2005 May;32(5):381-6.
18. Stücker M, Pieck C, Stoerb C, et al. Topical vitamin B12--a new therapeutic approach in atopic dermatitis-evaluation of efficacy and tolerability in a randomized placebo-controlled multicentre clinical trial. *Br J Dermatol.* 2004 May;150(5):977-83.
19. Januchowski R. Evaluation of topical vitamin B(12) for the treatment of childhood eczema. *J Altern Complement Med.* 2009 Apr;15(4):387-9.
20. Manzanares W, Hardy G. Vitamin B12: the forgotten micronutrient for critical care. *Curr Opin Clin Nutr Metab Care.* 2010 Nov;13(6):662-8.