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ARTÍCULO DE OPINIÓN

Opinion article

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"Let food be your medicine and medicine be your food" - Hippocrates

The role of diet has undergone many changes throughout the history of dermatologic therapy, from being a fundamental part of the treatment of different diseases (acne, atopic dermatitis, psoriasis, etc) to having a precise role in very specific processes, such as a gluten-free diet in dermatitis herpetiformis.

One does not have to be a fortune teller to predict that in dermatology in the future, particularly with regard to so-called healthy skin, we will be inundated with information proclaiming the value (not always supported by relevant scientific studies) of different dietary products that help to maintain and improve our skin. There is no question that the powerful food industry is seeking new outlets for its products in the area of health care, including products for cardiovascular health aimed at treating hypercholesterolemia and hypertension, and for cosmetic dermatology. Perhaps the clearest example of the latter is the sale of dietary supplements containing anti-free-radical agents to delay the onset of photoaging. The purpose of this article, however, is to review the role of so-called probiotic foods in the management of atopic dermatitis.

Probiotics have been known since very early times and early medical texts discuss the beneficial effects of milk on health. The best-documented example is that of Metchnikoff, who observed that some inhabitants of villages in Bulgaria were very long-lived, surviving beyond 100 years of age; he attributed this longevity to a diet rich in vegetables and yoghurt.

The range of foods on the market today means that we have access to foods that can be included in this category, but which have different characteristics[1]:

1. Probiotic foods are those that contain bacteria capable of surviving digestion and reaching the colon alive. Their 2 essential purposes are to help to reinforce our immune system and to restore the intestinal flora that may have become unbalanced by taking antibiotics or immunosuppressants. They are usually found in dairy products, mostly in the form of dietary drinks and yoghurts.
2. Prebiotic foods stimulate the growth of beneficial bacteria in the colon. Unlike the live bacteria of the probiotic foods, prebiotic foods are merely substances that, without being alive, act as energy supplements to help beneficial bacteria proliferate and survive. They are usually fructo-oligosaccharides (oligofructose and insulin) and are present in vegetables such as garlic, onion, leek, asparagus, artichoke, chicory root, tomato, banana, etc.
3. Combinations of prebiotics and probiotics are called synbiotics, which improve survival and implantation in the gastrointestinal tract of the live microorganisms in the food supplement. They consist of bifidobacteria, mainly *Lactobacilli*, with galacto-oligosaccharides or fructo-ologosaccharides, including products of lactic-acid fermentation, such as Korean kimchi, sauerkraut, and soy derivatives.

Prebiotic foods have recently been playing a more prominent role in complementary treatment and prevention of atopic dermatitis, but what is the basis for their use?

During pregnancy, an imbalance between the T helper cells Th2 and Th1 occurs, with an increase of different types of interleukins (IL), such as IL-4, IL-5, and IL-13, and a reduction of interferon (IFN-#g). Neonates with this imbalance (predominance of a low Th2 count) show a higher tendency to present allergic diseases.

A change in T helper cells gradually occurs in the early months of life due to the maturation of cells with antigens and increased production of IL-12 and IL-10. This maturation requires the stimulation of the bacteria of the intestinal flora.[2] Hence, the digestive tract is being considered to play an increasingly important role in the development of atopic processes.[3,4]

It has been well established that the digestive tract of neonates is sterile; colonization begins in the 3rd week of life and is completed by the 3rd month.[5] High levels of intestinal colonization are associated with a lower incidence of allergic diseases.[6] Children on antibiotic treatment, however, show a higher tendency toward these diseases. We are currently

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witnessing a lower rate of intestinal colonization that has also changed in composition; the previous predominance of *Escherichia coli* and enterobacteria has given way to predominance of gram-positive bacteria with less ability to stimulate Th1. Therefore, measures aimed at instating an appropriate intestinal population result in a lower incidence of allergic processes. Thus, probiotics lead to an increase in the population of intestinal bacteria, stimulating the low Th1 count and reducing the tendency to present atopic disease.[6]

The table shows some of the many bacteria with probiotic activity. The most commonly used bacterium is *Lactobacillus bifidum*.

Many studies have been carried out on the effect of probiotics on atopic dermatitis, with varying results. Kalliomaki et al[7] published a pioneering study in *The Lancet*, showing that introducing probiotic foods in the diet of women in the last trimester of pregnancy who had a high probability of having atopic children led to a lower number of neonates with the disease than expected, particularly when compared to the children of mothers who did not follow this diet. Recently, Lee et al [8] performed a meta-analysis of the PubMed and Cochrane 21 databases, in which they reviewed trials published between February 1997 and May 2007. Ten of the trials were randomized, double-blind controlled trials, 6 were prevention studies, and 4 were intervention studies. The trials were carried out on patients with active atopic dermatitis and the conclusion of the meta-analysis was that the measure was more effective as a preventive treatment than as a therapeutic measure.

In general, probiotics were well-tolerated and few adverse effects were reported; adverse effects included abdominal distension, diarrhea, constipation, nausea, and epigastric pain. Several cases of severe mycotic infections have been reported in individuals taking *Saccharomyces boulardii*.[9] All these patients were either cachectic or presented compromised immune function before taking the probiotic. No adverse reactions have been reported in people with normal immune systems.

Administration of *Lactobacillus casei* may prevent this bacterium from being produced in physiological conditions in the digestive tract, leading to a possible deficit when administration is suspended; this is a remote possibility and no studies have been performed or significant cases reported in this regard.

Indeed, the small number of studies carried out shows that probiotics are useful[10] in the following circumstances:

1. Improvement of diarrhea caused by antibiotics and some infections
2. Reduction of levels of bacteria that favor the development of intestinal cancer
3. Improvement of symptoms in patients with inflammatory bowel disease and infections due to *Helicobacter pylori*
4. Prevention or alleviation of atopic processes in children
5. Prevention of respiratory diseases
6. Reduction of hypercholesterolemia

Tabla 1. Bacteria Used as Probiotic Agents

Lactobacillus acidophilus
Lactobacillus bulgaricus
Lactobacillus bifidum
Lactobacillus longum
Lactobacillus rhamnosus
Bifidobacterium infantum

Many readers may believe that all of this is a fallacy and others—myself included—will be skeptical. However, I think that it is not advisable to ignore possible new therapies. Whether all this is true or pure commercial speculation is something we will not know for a long time.

Conflicts of Interest
The author declares no conflicts of interest.

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