

CONCISE MEDICAL REPORT

**Use of Spirularin® Gel in children with atopic dermatitis**

Provided by

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## Introduction

Atopic dermatitis (AD) is one of the most common inflammatory skin conditions in humans. It frequently starts in early childhood, persists in adolescence and can also be present during adult life. Current estimates of AD prevalence are 15 – 30% in children and 2 – 10% in adults in developed countries (1). AD is a complex, pruritic, and usually eczematous inflammatory skin disease which likely involves a skin barrier dysfunction in concert with immunologic abnormalities driven by dendritic cells (DCs), T cells, eosinophils as well as different cytokine and chemokine circuits (1, 2). Between 80% and 90% of affected patients display elevated peripheral immunoglobulin E (IgE) levels and type I sensitizations to a limited set of characteristic allergens, usually termed extrinsic AD, while this association is not found in the smaller group of patients with so called intrinsic AD (3). The treatment of AD includes topical anti-inflammatory therapies such as topical corticosteroids and calcineurin inhibitors as well as systemic corticosteroids and cyclosporine for the treatment of more severe disease and flares.

Because skin barrier dysfunction and bacterial infection, especially with *Staphylococcus aureus* play a crucial role in the initiation and perpetuation of AD, topical emollients and antiseptics are a prerequisite of AD management. This is particularly true for pediatric cases in which the use of topical corticosteroids or calcineurin inhibitors is limited due to their potential side effects. A skin care as basic therapeutic concept of AD in children optimally would be well tolerated, anti-inflammatory, improve skin barrier function and have antiseptic properties.

## Spirularin® Gel

Spirularin® Gel is a drug-free product that contains an extract of the tropical microalga *Spirulina platensis*, termed Spiralin™, as main active ingredient (4). Experimental studies have documented a variety of biological activities of Spiralin™; the extract exerts anti-inflammatory effects, e.g. it decreases the cutaneous release of pro-inflammatory mediators such as interleukin-1 (IL-1) in a model of human skin exposed to irritants. Spiralin™ also harbors a number of skin regenerative effects and enhances protein synthesis in keratinocytes and collagen synthesis in fibroblasts. Notably, the extract *in*

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*vitro* has a broad range of anti-microbial and anti-viral effects including strong inhibition of *Staph. aureus* and molds. A sugar contained in Spiralin™ known as Calcium-Spirulan prevents the attachment of herpes simplex virus type-1 (HSV-1) to human keratinocytes and, if used in a topical preparation, prevents herpes labialis in patients (4). Based on these characteristics of Spiralin™ contained in Spirularin® Gel and in light of the fact that infections with *Staph. aureus* and HSV are among the most frequent skin infections in patients with AD (5), the product seems ideally suited to be used for basic skin care in this condition. Furthermore, the gel is a light formulation of a watery gel that dermatopharmacologically matches perfectly the often strongly inflamed, erosive and oozing phenotype of active AD. The composition of the formulation almost completely avoids the use of preservatives and perfumes and other ingredients that may cause irritative or contact allergic skin reactions (see also INCI declaration attached).

### **Personal interpretation and experience**

AD in children is mostly limited to areas of predilection and is best treated with topical emollients. Predilection sites include the face, the neck and other body sites with increased sensitivity to the side effects of topical corticosteroids and calcineurin inhibitors, which restricts their use mostly to the intervention of flares. The basic therapeutic approach is the regular application of skin care products that ideally have positive effects on pathophysiologic aspects of AD including skin inflammation, barrier dysfunction, and bacterial colonization. Spirularin® Gel is a light gel without preservatives and with only rosemary as perfume that should be particularly well-tolerated even in sensitive skin of children affected by AD. Furthermore, Spiralin™ contained in the gel has regenerative, antimicrobial and antiviral properties with potentially beneficial effects in this inflammatory skin condition. I conclude that Spirularin® Gel should be perfectly suited to be used as basic skin care product in children with AD.

In the past 10 years I have used Spiralin™-containing skin care products in hundreds of patients with different types of inflammatory and infectious skin conditions and have never observed skin irritation or contact allergies. I have used Spirularin® Gel in approximately 70 children with AD. Mothers like it because it is easy to apply and economically in that only small amounts are often enough to treat even larger parts of

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children's skin. Beyond its anti-inflammatory properties the gel has a cooling effect that often provides instant relief of symptoms such as burning and itching. In my experience, regular application of the gel reduces oozing and crust formation and helps to stabilize and improve the skin condition. I, therefore, recommend Spirularin® Gel to be used as basic skin care for the management of children and adolescents with AD.

Hamburg, 25<sup>th</sup> of June 2017

Handwritten signature of Kristian Reich in black ink.

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## References

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3. Tokura Y. Extrinsic and intrinsic types of atopic dermatitis. *J Dermatol Sci* 2010; 58:1-7.
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5. Ong PY and Leung DY. *Clin Rev Allergy Immunol.* 2016; 51:329-337

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INCI declaration Spirularin® Gel:

AQUA, GLYCERIN, COCOS NUCIFERA (COCONUT), OIL, ALCOHOL DENAT, BETAINE, GLYCERYL OLEATE, CETEARYL ALCOHOL, TRICAPRYLIN, COCO-GLUCOSIDE, SODIUM HYDROXIDE, GLYCERYL CAPRYLATE, XANTHAM GUM, SODIUM STEAROYL GLUTAMATE, LEVULINIC ACID, AROMA, ROSMARINUS OFFICINALIS (ROSEMARY) LEAF OIL, SODIUM LEVULINATE, SPIRULINA PLATENSIS EXTRACT, SODIUM PHYTATE