New therapeutic anti-inflammatory action of an emollient *vs* topical steroids in Atopic Dermatitis

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Objectives

Atopic Dermatitis (AD) is a chronic dermatosis combining barrier defect and inflammation. The role of peroxisome proliferator-activated receptor α (PPAR-α) in the regulation of atopic skin inflammation has been recently demonstrated (1). Treatment of AD requires permanent skin care. This goal can be achieved by emollients, often in conjunction with topical steroids if needed. In a previous study (2), an emollient, containing 2% SOD (patented Sun-Flower Oleodistillate), with natural PPAR-α agonist properties, has demonstrated a 75% steroid-sparing effect (Steroid class II, desonide 0.05%). In this new comparative multicentric study, the natural PPAR-α agonist emollient has been used alone and its applications have been compared to those of a more potent steroid (class III, hydrocortisone aceponate cream 1.27mg/g)

Methods

This is an open, comparative study, with randomized attribution of treatments, conducted in Spain. Two groups of 40 children with light to moderate AD have been included by 12 dermatologists.
Inclusion criteria: Age 4 months to 4 years, light to moderate AD.
Exclusion criteria: Topical steroid applied during previous 8 days, infected AD, systemic steroid, antibiotic, immunosuppressive treatment, other cosmetics applied.
All children received a soap-free washing oil.
Group A applied the steroid 2 times a day on affected areas;
Group B the emollient (Stelatopia Emollient Cream®) on lesions and on the entire body 2 times a day.
Children were examined, and SCORAD was established at D0, D7 and D21. Quality of Life Questionnaires were filled at D0 and D21 (3-4).
(http://www.ukdermatology.co.uk/quality/index.asp).
Statistical tests were Mann and Whitney test for inter-group analysis and Wilcoxon test for intra-group analysis.

	Group A: Topical Steroid	Group B: Emollient
Emollient	0	2X/D
Topical steroid	2X/D	0
D0-D7-D21	SCORAD	SCORAD
D0-D21	IDQOL-DFIQ	IDQOL-DFIQ
D7-D21	Investigators assessment	Investigators assessment
D21	Auto-evaluations	Auto-evaluations

Results

40 children have been included in each group. Mean age was 2.3 in group A (5 months-5 years, 55% boys, 45% girls) and 2.4 years in group B (5 months-4 years, 35% boys, 65% girls).

SCORAD

Total score: At D0, SCORAD was similar in the 2 groups: 37.2 *vs* 36.9 (moderate AD).
In both groups, improvements were statistically significant *vs* D0 ($p<0.01$) at D7 (-49% and -48%) and D21 (-70% and -75%) (**Figure 1**).
There were no statistic differences between SCORAD at D7 (18.9 *vs* 19.2) and at D21 (11 *vs* 9.4). Patented emollient and topical steroid have the same impact on SCORAD at D7 and D21. All items of SCORAD improved significantly ($p<0.01$) at D7 and D21 *vs* D0. They were all in the same range except for extent of AD lesions and xerosis.

Extension score: Extent of lesions decreased significantly more and faster with steroid (-53% at D7 and -78% at D21) than with emollient (-32% at D7 and -67% at D21) ($p<0.05$ A *vs* B at D7 and D21) (**Figure 2**). This is due to the rapid anti-inflammatory effect of topical steroids.

Xerosis score: On the contrary, xerosis of remote areas has been naturally better improved by the emollient (-81%) than in the steroid group at D21 (-53%) ($p<0.01$ B *vs* A at D21) (**Figure 3**). This latter result in the steroid group might be attributed to the soap-free washing oil used by both groups.

Figure 1: SCORAD improvement
SCORAD improvement at D7 and D21 vs D0
TS: Topical Steroid; Em: Emollient
** p<0,01 - Wilcoxon test
($) NS - A *vs* B - Mann and Whitney test

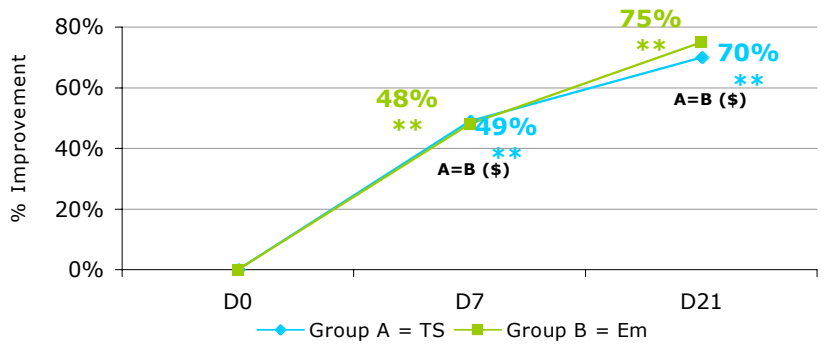


Figure 2: Extension scores
Extension A>B
TS: Topical Steroid; Em: Emollient
* p<0,05 - comparison A vs B at D7 and D21 - Mann Whitney test
$$ p<0,01 - comparison at D7 and D21 *vs* D0 - Wilcoxon test

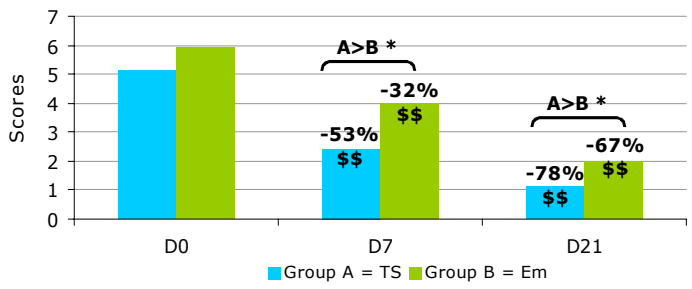
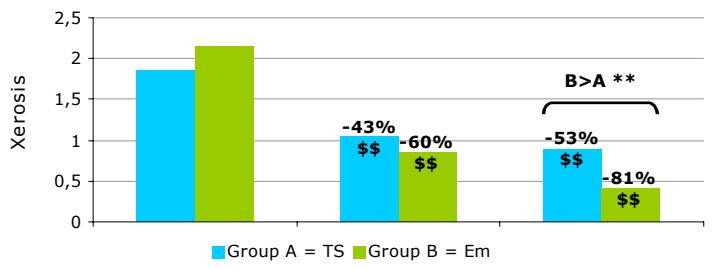


Figure 3: Xerosis scores
Xerosis
TS: Topical Steroid; Em: Emollient
** p<0,01 - comparison A *vs* B at D7 and D21 - Mann Whitney test
$$ p<0,01 - comparison at D7 and D21 vs D0 - Wilcoxon test)



AD flares

Investigator Assessment stated that the emollient could reduce the frequency of atopic flares (93%), the intensity of flares (90%), with no statistic difference between the 2 groups at D21. Comparative analysis between D7 and 21 reveals that performances on flares of the emollient significantly improved with time, which was not the case with the steroid.

Figure 4: Frequency of AD Flares
Decrease of frequency of AD flares
TS: Topical Steroid; Em: Emollient
** p<0,01 - D21 *vs* D7 - Wilcoxon test

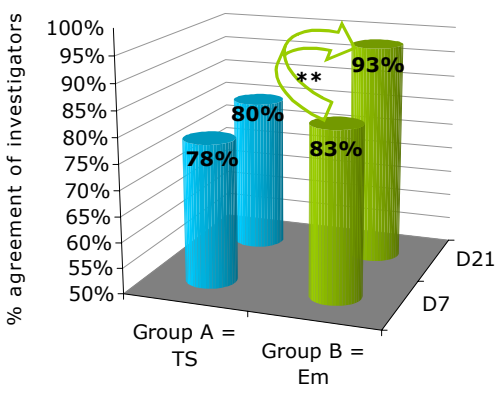
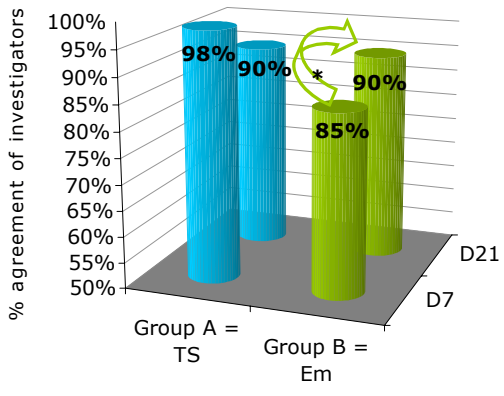


Figure 5: Intensity of AD Flares
Decrease of intensity of AD flares
TS: Topical Steroid; Em: Emollient
* p<0,05 - D21 *vs* D7 - Wilcoxon test



Quality of life

% improvement at D21	Group A = TS	Group B = Em
IDQOL	65% **	72% **
DFIQ	67% **	75% **
Global Score	66% **	73% **

Auto-evaluation questionnaires

	Emollient
Erythema decrease	95%
Pruritus decrease	95%
Lesions regression	98%
Soothing properties	100%
Immediate hydration	98%
Long-lasting hydration	88%
Easy penetration into the skin	100%
Non sticky, non greasy	100%

Conclusion

For the first time, a natural agonist PPAR-α emollient (2% SOD) has demonstrated therapeutic properties comparable to those of a class III steroid in a 3 weeks comparative study. SCORAD were strictly similar at all times of evaluation (70%/75% decrease at D21).
The emollient had a slower but longer impact on AD flares compared to the steroid. This is interpreted as a benefit for AD which is a chronic disease, requiring maintenance skin care.
The impact on the Quality of Life tended to be better with the emollient but not reaching significant difference compared to steroids alone. Tolerance and cosmetic properties were considered as excellent.

A previous randomized study combining steroids with the same natural agonist PPAR-α emollient demonstrated a 75% steroid sparing effect (2). These anti-inflammatory properties of the emollient on AD are linked to its agonist PPARα properties, previously demonstrated *in vitro* (5). In the present study, performances of the PPAR-α emollient tend to demonstrate a total steroid-sparing effect.

(1) D Staumont-Sallé *& al*, J Allergy Clin Immunol 2008 121 962-8
(2) P Msika *& al*, Ped Dermatol (in press)
(3) Lawson V *& al*, Br J Dermatol, 1998; 138: 107-113.
(4) Lewis-Jones M S *& al*, Br J Dermatol 2001 144: 104-10
(5) M le Maitre *& al*, Nouv Dermatol 2007, 26, suppl 1, 1-24

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