

Oat Components Improve Skin Tone and Pigmentation In-Vitro and in Atopic Dermatitis In-Vivo

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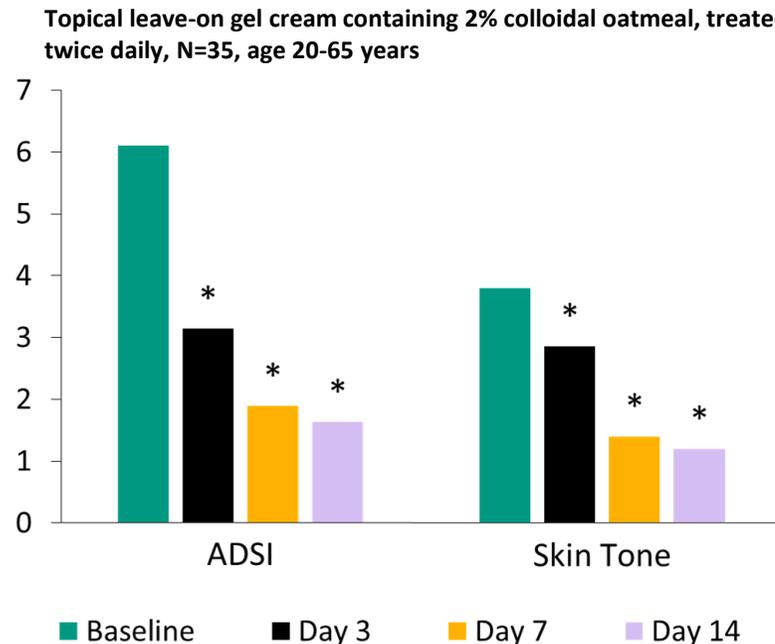
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Introduction, Objective, and Methods

Introduction

- Eczema and atopic dermatitis (AD) are chronic inflammatory conditions that often lead to post-inflammatory hyperpigmentation (PIH), a common sequela in skin of color that negatively impacts quality of life (QOL). Moisturizers containing colloidal oatmeal (CO) and avenanthramides are effective for patients with eczema.
- A previously presented clinical study in patients with mild to moderate AD including those with FST IV-VI using a CO formulation (containing 2% colloidal oat and 1% oat extract) showed significant improvements in lesional skin tone as early as day 3.¹
- Oat extract raw material contains a mixture of all 3 avenanthramides (Avn) A, B, and C.
- Avenanthramides have been shown to inhibit tyrosinase and melanogenesis in human melanoma in vitro.²



ADSI = Atopic Dermatitis Severity Index, * Highly significant improvement in all parameters, at all timepoints ($p < 0.001$) versus baseline

Objective

- To evaluate several oat components found in CO for the effect on skin tone and melanin formation.

Methods

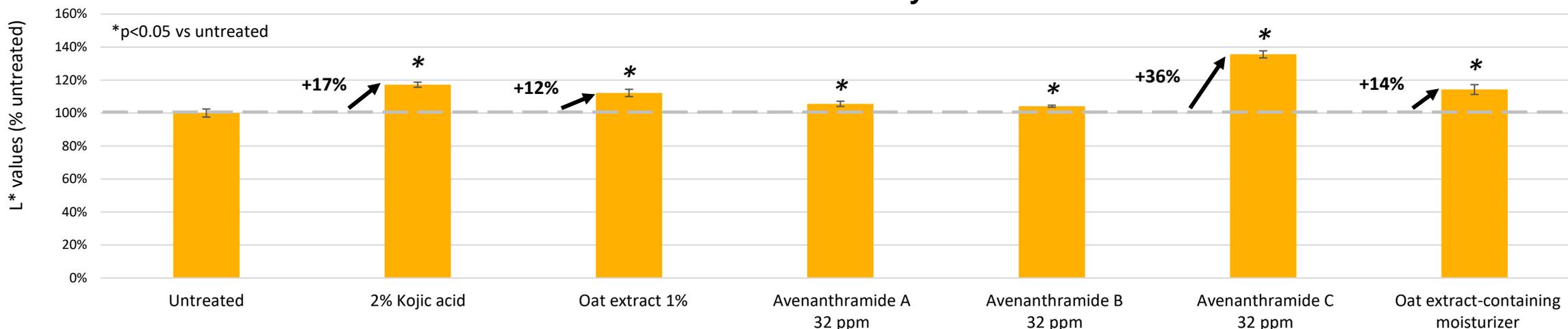
- Reconstituted melanin-containing human skin tissues (MEL-300B) were used. Oat components AvnA, AvnB, AvnC and oat extract were evaluated for their abilities to lighten skin tone (L^* value measured by Konica Minolta Color Spectrophotometer [CM-700d]) and decrease melanin content by melanin extraction using Solvable as compared with untreated samples. Kojic acid, a tyrosinase inhibitor, was used as positive control.
- Additionally, AvnA, AvnB, AvnC and oat extract were evaluated for their protection against TNF α -stimulated production of proinflammatory cytokine IL-8 in vitro in human neonatal keratinocytes.

1. 25th World Congress of Dermatology; July 3-8, 2023; Suntec City, Singapore. Poster 18851. 2. JY Park, et al. Inhibitory effect of avenanthramides (Avn) on tyrosinase activity and melanogenesis in α -MSH-activated SK-MEL-2 cells: in vitro and in silico analysis. *Int J Mol Sci.* 2021;22:7814. doi: 10.3390/ijms22157814.

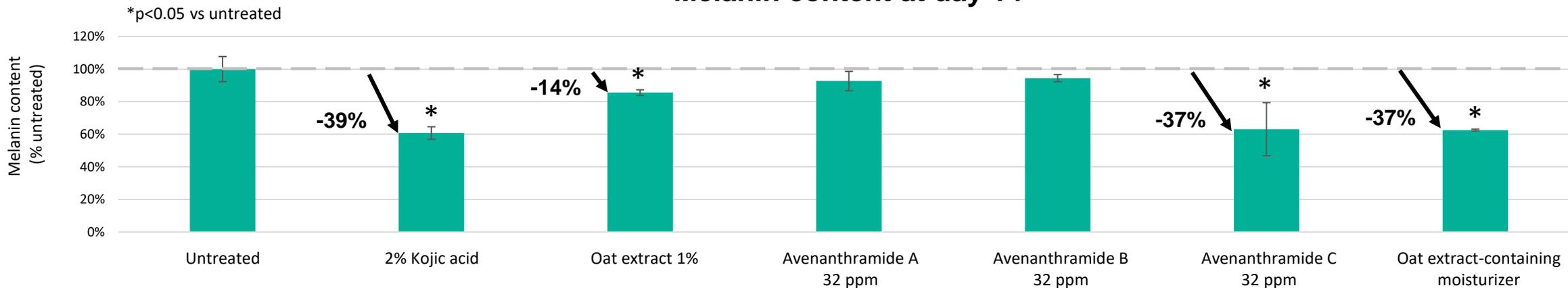
Results

Avenanthramide C, oat extract, and oat extract-containing moisturizer all showed statistically significant skin tone lightening as measured by chromameter L* values, and reduction in total melanin contents vs untreated tissues in reconstituted melanin-containing human skin tissues

L* values at day 14

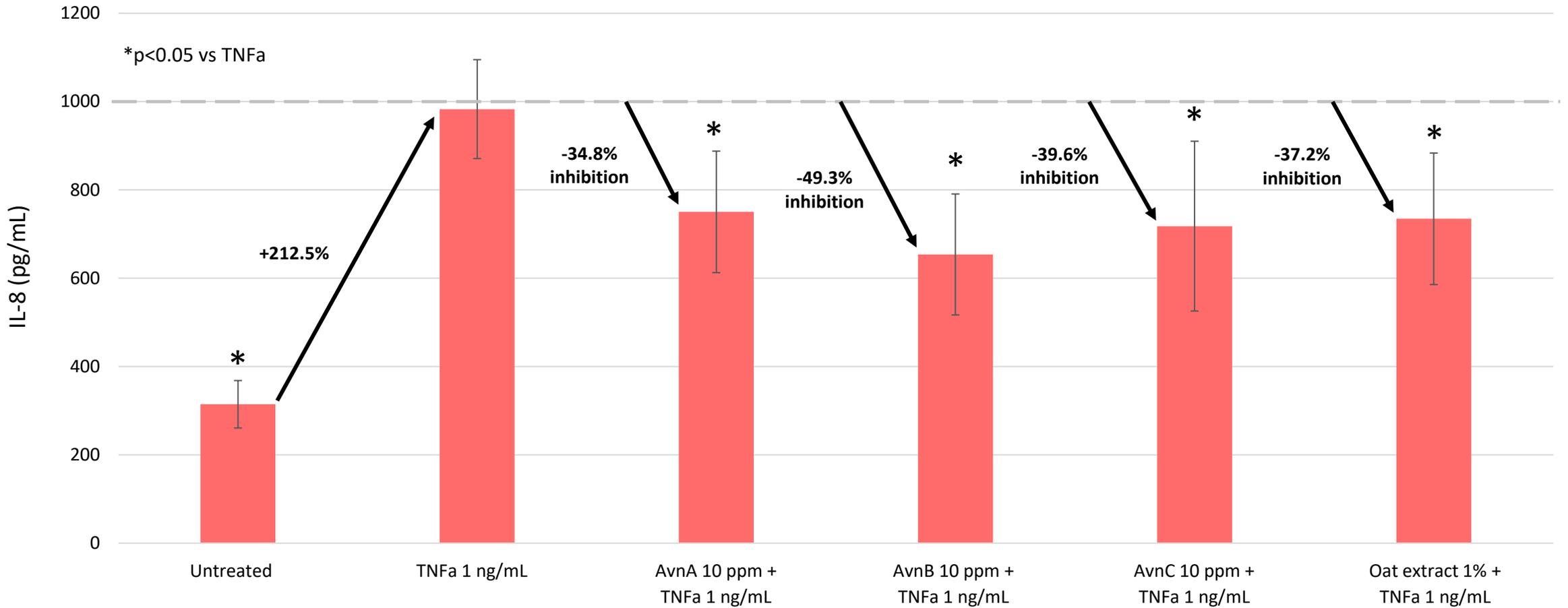


Melanin content at day 14



Results

AvnA, AvnB, AvnC and oat extract provided significant protection against the TNFa-stimulated production of proinflammatory cytokine IL-8 in vitro in human keratinocytes



Conclusions

- A CO formulation (containing 2% colloidal oatmeal and 1% oat extract) showed significant improvements in AD lesional skin tone as early as day 3 in vivo.¹
- Oat extract and avenanthramides inhibited both pigmentation and TNFa-induced proinflammatory cytokine IL-8 in vitro.
- These data suggest an insight for a possible mechanism by which oat components help improve lesional skin tone of eczema and AD through decreases in inflammation and melanin production.

1. 25th World Congress of Dermatology; July 3-8, 2023; Suntec City, Singapore. Poster 18851.