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(54) **TREATMENT OF PSORIASIS THROUGH
DOWN-REGULATION OF THE
EGF-RECEPTOR WITH
TOPICALLY-APPLIED EGF**

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(57) **ABSTRACT**

From unrelated but similar fields it is deduced that certain forms of psoriasis can be effectively treated through topical application of EGF-containing formulations. This patent application summarizes the theoretical basis for this finding and requests protection for the idea, while clinical evaluation is in preparation.

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**TREATMENT OF PSORIASIS THROUGH
DOWN-REGULATION OF THE EGF-RECEPTOR
WITH TOPICALLY-APPLIED EGF**

INTRODUCTION

[0001] Psoriasis is a chronic skin disorder that affects approximately 4.0 million people in the US., and annual treatment costs in the USA alone are estimated at over \$1.5 billion. There are no currently available drugs for this disease that offer satisfactory efficacy and safety. Psoriatic lesions are caused by the hyperproliferation of keratinocytes, but it has been demonstrated that EGF-R signalling is required for the growth of keratinocytes.

[0002] It has been demonstrated that the upper epidermal layer in psoriatic tissue contains levels of EGF receptors (EGFR) more similar to the levels found in the mitotically-active basal cell layer of skin. In normal epidermis r-EGF is located primarily in the germinative layer, which contains r-EGF levels 4 times higher than those found in the more-differentiated cells of the upper epidermal layers. In psoriatic lesions the upper epidermal layers shows r-EGF levels 2x higher than in normal tissue, while the germinative layer has normal levels. (L. A. Nanney et al; J. Invest. Dermat. Vol 85, p 260-265).

[0003] There is only a poor correlation between the levels of r-EGF and the level of cellular proliferation. An example of cells with elevated metabolism but low mitotic activity is the case of the sweat duct epithelium. Similarly, the high

level of r-EGF indicates elevated metabolism rather than lack of differentiation in psoriatic lesions.

PROPOSAL

[0004] As the main difference in r-EGF distribution in normal and psoriatic tissue is the abnormal retention of the receptor beyond the first 2-3 cell rows in the stratum basalis in psoriatic tissue, we propose to reduce these concentrations through a down regulation of the receptor using higher than normal levels of EGF at the level of the receptor.

[0005] This is similar to the down regulation of FSH and LH excretion through the saturation of pituitary GnRH receptors in response to a constant level of GnRH.

1-10. (canceled)

11. A topical formulation comprising epidermal growth factor (EGF) and a dermatologically acceptable excipient or carrier.

12. The formulation of claim 11, wherein said EGF is in an amount to down regulate the EGF receptor.

13. The formulation of claim 11, wherein said EGF is present at 0.01 to 50 µg/g.

14. The formulation of claim 13, wherein said EGF is present at 0.5-20 µg/g.

15. The formulation of claim 11, further comprising an anti-inflammatory.

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