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New investigational drugs for androgenetic alopecia.

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Erratum in

- Erratum. [Expert Opin Investig Drugs. 2015]

Abstract

INTRODUCTION:

Androgenetic alopecia (AGA) is the most common form of hair loss, however current treatment options are limited and moderately effective. In the past few years, there has been an increased interest in deciphering the molecular mechanisms responsible for this disorder, which has opened the possibility of novel treatments that promise to not only stimulate hair growth, but also to induce formation of new hair follicles.

AREAS COVERED:

The future holds more effective topical treatments with less systemic side effects (such as topical 5-alfa-reductase inhibitors), prostaglandin analogs and antagonists, medications which act through the Wnt signaling pathway, stem cells for hair regeneration, platelet-rich plasma (PRP) and more effective ways of transplanting hair. A comprehensive search was made using PubMed, GoogleScholar and Clinicaltrial.gov using different combination of key words, which included AGA treatment, new treatments for AGA, Wnt pathway, prostaglandins, PRP and stem cells for hair regrowth.

EXPERT OPINION:

In the near future, treatments with topical 5-alfa-reductase inhibitors and prostaglandin agonists or antagonists are expected. More evidence is needed to verify the efficacy of PRP. Although hair follicle bioengineering and multiplication is a fascinating and promising field, it is still a long way from being available to clinicians.

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Promising alternative clinical uses of prostaglandin F2α analogs: beyond the eyelashes.

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Abstract

Prostaglandin F2α analogs, commonly prescribed for glaucoma treatment, have been shown to induce side effects such as cutaneous hypertrichosis and hyperpigmentation. Therefore, these medications have theoretic applications in the treatment of alopecia and disorders of hypopigmentation. We reviewed the literature to find original studies assessing the use of prostaglandin F2α analogs in these settings. Studies and reports were analyzed in regards to androgenic alopecia, alopecia areata, chemotherapy-induced alopecia, vitiligo, and hypopigmented scarring. Based on the results of these studies, and consideration of pathophysiologic mechanism, the most promising applications for prostaglandin F2α analogs include androgenic alopecia, chemotherapy-induced alopecia, and alopecia areata concurrently treated with corticosteroids.

KEYWORDS:

alopecia areata; androgenic alopecia; bimatoprost; glaucoma; latanoprost; prostaglandin; prostaglandin F2α analog; travoprost; vitiligo

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Prostaglandin D2 inhibits hair growth and is elevated in bald scalp of men with androgenetic alopecia.

Garza LA[1], Liu Y, Yang Z, Alagesan B, Lawson JA, Norberg SM, Loy DE, Zhao T, Blatt HB, Stanton DC, Carrasco L, Ahluwalia G, Fischer SM, FitzGerald GA, Cotsarelis G.

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Abstract

Testosterone is necessary for the development of male pattern baldness, known as androgenetic alopecia (AGA); yet, the mechanisms for decreased hair growth in this disorder are unclear. We show that prostaglandin D(2) synthase (PTGDS) is elevated at the mRNA and protein levels in bald scalp compared to haired scalp of men with AGA. The product of PTGDS enzyme activity, prostaglandin D(2) (PGD(2)), is similarly elevated in bald scalp. During normal follicle cycling in mice, Ptgds and PGD(2) levels increase immediately preceding the regression phase, suggesting an inhibitory effect on hair growth. We show that PGD(2) inhibits hair growth in explanted human hair follicles and when applied topically to mice. Hair growth inhibition requires the PGD(2) receptor G protein (heterotrimeric guanine nucleotide)-coupled receptor 44 (GPR44), but not the PGD(2) receptor 1 (PTGDR). Furthermore, we find that a transgenic mouse, K14-Ptgs2, which targets prostaglandin-endoperoxide synthase 2 expression to the skin, demonstrates elevated levels of PGD(2) in the skin and develops alopecia, follicular miniaturization, and sebaceous gland hyperplasia, which are all hallmarks of human AGA. These results define PGD(2) as an inhibitor of hair growth in AGA and suggest the PGD(2)-GPR44 pathway as a potential target for treatment.

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Evaluation of a Therapeutic Alternative for Telogen Effluvium: A Pilot Study

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Abstract

Background/Aim: Telogen effluvium (TE) is a scalp disorder characterized by the thinning or shedding of hair result-ing from the early entry of hair in the telogen phase. Nigella sativa (NS) is a dicotyledonous belonging to the Ranuncu-lacae family. It has been shown that its major constituent, tymoquinon (TQ), exerts anti-oxidant and anti-inflammatory effects by inhibiting pro-inflammatory mediators, such as cyclooxygenase and prostaglandin D2. The aim of this study is to evaluate the efficacy of NS essential oil as a potential treatment for TE, a pathology characterized by a significant inflammatory component. Study Design/Methods: Twenty patients affected by TE for this double-blind, placebo con- trolled and randomized study were enrolled. Ten of these patients were treated with a scalp lotion containing 0.5% NS, daily for 3 months, while the other ten patients were treated with placebo daily for 3 months. Videodermatoscopic analysis (Trichoscan Dermoscope Fotofinder®) and evaluation of three independent dermatologists were performed before treatment (T0), after 3 months of treatment (T3) and at the 6 months follow-up (T6). Results: The results showed a significant improvement in 70% of patients treated with NS. Videodermatoscopic analysis showed a signifi- cant increment of hair density and hair thickness in patients treated with NS. NS was also able to reduce the inflamma- tion observed in the majority of patients affected by TE. Conclusions: The results of this study suggest that NS can be considered potentially useful for the treatment of TE.
Keywords: Telogen Effluvium; Nigella sativa; Hair Density; Hair Thickness