Review of Topical Therapies for Beard Enhancement

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Almurayshid et al.: Topical therapies for Beard enhancement

Beards and facial hair are part of males. It may be a sign of masculinity and attraction. Topical therapy for beard enhancement may be desired by some men to improve beard growth and density. A review of all reports on topical treatment options for beard enhancement is presented here. Reports on topical treatment for beard enhancement were searched using The United States National Library of Medicine PubMed, exploring all titles containing beard, facial hair or mustache as of July 22 2020. A total of 445 articles resulted from the search after reviewing the publications for potential relation to beard enhancement. Three studies match the aim of the review regarding topical therapy for beard enhancement in men. Two of which were double-blind clinical trials and one was a case report. Topical 3 % minoxidil, as studied by Ingprasert et al., showed a significant increase in hair count, photographic scoring and patient self-assessment. Saeedi et al. studied the use of 2.5 % testosterone gel for men with thalassemia major with an increase in terminal hair. Vestita et al. published a case report demonstrating unexpected improvement of beard density for a patient using tretinoin 0.05 % cream. Only limited evidence could be presented on topical treatments for beard enhancement. Topical minoxidil is an off-label treatment to enhance the beard. Other topical options such as testosterone, tretinoin, bimatoprost could constitute potential treatment options. Further studies needed to recommend the best topical options for men who desire to enhance their beards.

Key words: Beard, facial hair, minoxidil, testosterone, tretinoin

The beard and facial hair have been a social expression for men to different cultures. Various styles from full beard, goatee or shaved and even others[1]. Facial hair can affect the social interactions between individuals and alternate sex. The beard offers a more masculine, dominant, and older-looking character, as reported by several studies[2,3]. Some cultures value the beard from a religious point of view. However, others are more of a racial or community figure[4]. Women can be attracted to men with beards. Also, preferred by some women if chosen as parenting or longstanding partners. Nevertheless, cultural differences can affect how men express their facial hair and even women’s preference for facial hair. Beard enhancement[5] would probably be a demand for some men. This article aims to review the available topical therapy for individuals who want to enhance their facial hair. Using The United States National Library of Medicine, PubMed was searched to find topical therapy to enhance the beard growth or density. All titles that contained beard, facial hair or mustache as on July 22, 2020 were explored, and the results were filtered to find any topical treatment used for enhancing beard growth. A total of 445 articles resulted from the initial search, after reviewing the publications for potential relation to beard enhancement. Three studies matched the aim of the review regarding topical therapy for beard enhancement in men and these are summarized in Table 1. Facial hair characterize the male and underdeveloped facial hair can be stressful for some men[6]. Topical minoxidil induce hair growth in androgenic alopecia[7]. While still not approved for facial hair enhancement, off-label use was reported[8]. Minoxidil is known to induce hair growth as a side effect, even in other body sites[9,10]. Ingprasert et al. published a study showing beard enhancement after topical minoxidil (Table 1)[5]. The significant results are promising; however, no other clinical studies were reported. Whether the enhancement can be long-lasting, it may be a temporary effect while using topical minoxidil. Lee et al. studied the ability of minoxidil 2 % lotion to enhance eyebrows compared to a placebo. These authors demonstrated significant improvement in the treatment group, including hair count and diameter[11]. Another study examined topical minoxidil 3 % and topical bimatoprost 0.03 % for enhancement of eyebrows. The results showed that both treatments were effective with no significant difference; however, contact dermatitis happened more frequently in the minoxidil.

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Minoxidil can induce hair growth through various suggested mechanisms. For example, minoxidil may work through prolonging the anagen phase and inducing antiapoptotic markers. Furthermore, minoxidil can augment the vascular supply of dermal papilla by increasing vascular endothelial growth factor. It may also act by stimulating adipocyte stem cells to produce growth factors. Saeedi et al. carried out a clinical trial, which showed that topical testosterone increased the beard area terminal hair in young men who suffered from thalassemia major. Hypogonadism and low levels of testosterone are known complications among this population. Therefore, topical testosterone, as suggested by the authors, helped transform the vellus hair into terminal hair. Beard area possesses androgens receptors that influence hair growth. Thornton et al. reported in vitro experiments that adding testosterone on beard dermal papilla cells in culture caused an increase in mitotic activities owing to androgen dependence. Transgender males grow facial hair after receiving testosterone therapy, while antiandrogens reduced the beard hair in transgender females. Another topical therapy is tretinoin, which was reported to enhance the beard of one patient by Vestita et al. This was an incidental finding as a 30-year-old man received tretinoin cream for acne treatment. Bazzano et al. studied tretinoin therapy for androgenetic alopecia. They reported an increase in terminal hair after using topical tretinoin in 7 out of 12 individuals. Hair growth cycle in animal studies demonstrated that retinoids might increase the anagen phase and decreased the telogen phase. However, retinoids such as isotretinoin might induce telogen effluvium. Retinoids have a synergistic effect on minoxidil action on hair growth. This effect may be due to enhanced permeability of the skin, thereby improving drug absorption. Tretinoin also stimulates the sulfotransferase enzymes increasing the availability of minoxidil sulfate. This metabolite is more potent than the parent drug. Testing for sulfotransferase enzyme activity might predict minoxidil responders among androgenetic alopecia patients. Safety of the therapies is essential. These treatments can come with side effects, such as erythema, irritation and contact dermatitis. Minoxidil at moderate and higher concentrations causes relaxation of the smooth muscles of blood vessels supplying the scalp eventually cause hypotension. Topical testosterone can be absorbed systemically and might even induce hirsutism in sexual partners. Lastly, hair transplantation can be an alternative approach. In conclusion, studies on topical treatments for beard enhancement are limited in the literature. Minoxidil in concentrations greater than 3% is potentially used as an off-label treatment option to enhance beard growth. Other topical options such as testosterone, tretinoin, bimatoprost might constitute potential treatments. Further studies needed to recommend topical therapies for patients who desire to increase their beard density.

**Conflict of interests:**

The authors declared no conflict of interest.

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