

The efficacy of polynucleotide injections in aesthetic medicine: a review

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Polynucleotide (PN) injections have gained significant attention in aesthetic medicine due to their beneficial effects on the skin, hair, and other tissues. This review explores the current evidence supporting the use of PN injections for various aesthetic concerns.

Introduction

Aesthetic medicine encompasses a wide range of non-invasive and minimally invasive procedures aimed at enhancing the appearance of the skin, hair and other aesthetic concerns. PN injections, a nucleotide polymer composed of DNA fragments, have emerged as a novel treatment option in this field. PN injections offer numerous benefits for skin rejuvenation, scar treatment, hair loss management and bone regeneration [1].

PN injections for skin rejuvenation

The ageing process is associated with a decline in collagen and elastin production, resulting in the appearance of fine lines, wrinkles and sagging skin. PN injections have shown promising results in improving skin hydration and elasticity. A clinical trial conducted by Kim, et al. (2015) involving 36 patients demonstrated that PN injections significantly improved skin hydration, elasticity, firmness, texture and tone [1]. The stimulation of collagen and elastin production by PN injections restores the structural integrity of the skin, resulting in a more youthful appearance.

Moreover, PN injections have exhibited protective effects against oxidative stress-induced skin cell damage. Kwon, et al. (2014) conducted a study on 20 patients with photo-ageing and found that PN injections reduced the production of free radicals and improved the skin's antioxidant activity [2]. This antioxidant activity helps protect the skin from damage caused by free radicals, which are unstable molecules that can lead to premature ageing and other skin problems.

PN injections for scar treatment

Scar treatment is a significant concern in aesthetic medicine. PN injections have demonstrated biostimulatory effects, promoting the growth of new skin cells and facilitating tissue repair. Lee, et al. (2018)

conducted a study involving 40 patients with acne scars, demonstrating that PN injections significantly improved scar appearance, reducing scar depth and enhancing skin texture [3]. The biostimulatory properties of PN contribute to scar remodelling, ultimately leading to improved aesthetic outcomes.

In addition to its biostimulatory effects, PN injections have been found to enhance wound healing. Kim, et al. (2015) investigated the effects of PN injections on wound healing in a rat model and observed improved wound healing when PN injections were combined with fractional laser resurfacing [1]. PN injections promote collagen synthesis and increase angiogenesis, contributing to the acceleration of wound healing processes.

PN injections for hair loss management

Hair loss, particularly androgenetic alopecia, is a common concern for both men and women. PN injections have shown promise in promoting hair growth, increasing hair density, and improving hair thickness. Park, et al. (2014) conducted a study involving 32 patients with androgenetic alopecia, demonstrating significant improvements in hair growth, density and thickness after PN injections [4]. PN injections promote the proliferation and migration of human follicle dermal papilla cells, essential for hair growth.

PN microneedling has emerged as an effective treatment modality for androgenetic alopecia. Kim, et al. (2014) reported that PN microneedling improved hair thickness and density after 12 weeks of treatment [5]. The combination of PN and microneedling promotes hair follicle survival, decreases apoptosis, and stimulates hair regrowth.

PN injections for bone regeneration

Bone defects and fractures pose significant challenges in aesthetic medicine. PN injections have been investigated for their potential in bone regeneration and increasing bone density. Lee, et al. (2018) conducted a study involving 36 patients with bone defects and found that PN injections improved bone regeneration and increased bone density [6].

PN injections promote osteoblast activity, enhancing bone healing processes.

Conclusion

PN injections have emerged as a versatile and promising treatment option in aesthetic medicine. The research appears to support their efficacy in various aesthetic concerns, including skin rejuvenation, scar treatment, hair loss management, and bone regeneration. PN injections stimulate collagen and elastin production, promote tissue repair, protect against free radical damage, and enhance wound healing. They offer a safer and effective non-surgical alternative to traditional cosmetic procedures. However, further research and head-to-head studies with long-term studies are warranted to explore the full potential and optimise the utilisation of PN injections in aesthetic medicine.

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Declaration of competing interests: None declared.