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## Mesotherapy for Hair Loss-is it Useful? Review of Literature

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### Abstract

Mesotherapy is defined as microinjection of pharmaceutical agents, amino acids and vitamins into the mesoderm. Mesotherapy for hair loss is commonly indicated for androgenic alopecia and telogen effluvium. Mesotherapy is a well- advertised therapeutic modality on the internet and media but data on its safety and efficacy in cosmetic conditions are limited. In current situation no adequate, peer -reviewed clinical trials critically evaluating the efficacy of mesotherapy for dermatological and aesthetic indications are available. The mechanism of action of many of the products is either doubtful or unknown and there are no clear cut guidelines on the dosage and efficacy of the products.

**Key words:** Hair loss; Mesotherapy; Minoxidil.

### INTRODUCTION

Globally hair loss is a common aesthetically and psychosocially distressing condition.<sup>1,2</sup> An estimated 35 million men and 21 million females in United States suffer some form of hair loss and 65% of men have visible hair loss by age 60 and 40% of women suffer visible hair loss by age 40.<sup>3</sup> The most common cause of hair loss is Androgenic alopecia. The number of hair loss sufferers, world-wide, seeking professional treatment more than doubled from 361,077 to 811,363. Men are more likely than women to look into hair restoration surgery (20% vs. 12%).<sup>4</sup> However more women seek methods of non-surgical hair restoration, up 31.8%. There are variety of therapeutic non-surgical options for hair loss, of which Minoxidil and Finasteride are FDA approved for androgenic alopecia, others like Dutasteride, Mesotherapy, Microneedling, PRP, Nutritionol, Antioxidants and Light therapy have recently gained popularity in clinics and social media platforms (however they have been tried in small number of patients). Mesotherapy, a term derived from Greek word “meso” means middle and “therapia” meaning to treat medically. It was first coined by Dr Michel Pistor, a French physician in 1952. He founded French society of Mesotherapy in 1964. In 1987 French national academy of medicine officially acknowledge mesotherapy as speciality. Mesotherapy

is defined as micro-injection of pharmaceutical agents, amino acids, vitamins and others into the mesoderm. Connective tissue and Dermis of skin are embryonically derived from mesoderm and hence its importance in mesotherapy. Regarding its popularity, about 16,000 US physicians use mesotherapy in their daily medical practice. Growth of number of mesotherapy-trained physician which is estimated at 300 per month, mushrooming of mesotherapy centers across the globe and the conduct of numerous international congresses all speak of its status. Indications for mesotherapy are hair loss commonly for Androgenic alopecia, Telogen effluvium, cellulite, lipolysis and skin rejuvenation. Drugs and Ingredients used for mesotherapy of hair loss are Minoxidil, Dutasteride, PRP, Biotin, Dexenol, Acetyl tetrapeptide-3, Biochanin-A, nano peptides and cocktails. Materials used for mesotherapy can be classified as principle/ major ingredients (have evidence, FDA) and as complementary/minor ingredients claimed to have improve the condition. Cocktail or the mixture should contain at least two or three principal agents for it to be effective. Procedure for mesotherapy for hair loss needs hypodermic needles or mesogun, with depth of 0.5mm-0.6mm, frequency of session be once a week for 4 weeks then monthly maintenance and volume per session of 5cc for entire scalp. There are various techniques like

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point by point where 0.02-0.05 ml of Drug solution perpendicular to the skin (4mm deep, about 1-2cm apart), Nappage technique involves more superficial (2mm deep infiltration) given at 45° angle, epidermic (1mm deep) and papule technique where injection of the drugs at the dermoepidermal junction, between 2mm and 4mm are given raising a small papule and it is used for wrinkles, alopecia and mesobotox.<sup>5</sup> Contraindications are pregnancy, Insulin Dependent Diabetes Mellitus, history of stroke, thromboembolic phenomenon and patients on medications like aspirin, warfarin, heparin etc. Cost of the procedure depends on geographic region, number of microinjections and sessions involved and medical care provider. Table 1 shows cost of mesotherapy for hair loss in \$ in different parts of the world.

**Table 1.** Countries showing Cost of mesotherapy for hair-loss in US\$

Country	cost in US\$
Malaysia	500-970
USA	300-800
Spain	395-450
UK	280-300
Turkey	247-300
UAE	80-100
India	30-125

There are few studies showing efficacy of some ingredients in review of literature. A randomized control trial done by Azam et al found efficacy of topical minoxidil inferior to mesotherapy with Minoxidil for androgenic alopecia.<sup>6</sup> There are various studies showing effectiveness of mesotherapy with dutasteride.<sup>7,8,9,10</sup> Promising result was seen with multivitamins and cocktails in french studies.<sup>11,12</sup> Biochanin -A which is derived from red clover is a natural phytochemical flavonoids traditionally used for cancer, asthma and inflammatory disorders has now gained its popularity in hair loss treatment due to its proposed mechanism of modulation of conversion of testosterone to DHT.<sup>13</sup> Acetyl tetra peptide-3 is also a new molecular compound which has several properties like to decrease inflammatory response, modulates levels of DHT, stimulates the extracellular matrix and anchoring proteins and stimulates tissue remodeling and thus helps in treatment of hair loss.

Both the compounds have gained popularity in private clinics but as such well controlled trials are not available in the literature. One of my personal experience (as shown in Figure-1) in a patient of alopecia areata, right side of the scalp was treated with Intralesional steroid injections with triamcinolone acetonide and left side mesotherapy with cocktail containing nicotinic acid, pantheon, zinc, Vitamin B6 etc. After four sessions, hair growth was more in right side treated with intralesional steroid as compared to left side with mesotherapy cocktail (moderate hair growth could be seen).



Before treatment a, b



After treatment cocktail c, d

**Figure 1.** Photographs showing comparison of both right side (intralesional steroid) and left side before treatment and after treatment (cocktail) Pasted Graphic a, b, c, d.

In contrast to the claims of mesotherapy being a safe minimally invasive procedure several side effects have been reported. It is also interesting to note that

in contrast to lack of data on its efficacy, there are a number of published studies about its' complications. Adverse effect with mesotherapy for hair loss are few but as quoted in the literature are multifocal scalp abscess, scalp melanoma, and contradictory hair loss at injection sites.<sup>14,15,16,17</sup> There are other local side effects like bruising, skin necrosis, atypical mycobacteria, allergic reaction, lichenoid reaction, post inflammatory hyper pigmentation, infections which have been noticed after mesotherapy for lipolysis<sup>18,19,20,21,22</sup>. Mesotherapy is a well- advertised therapeutic modality on the internet and media and is practiced in Europe and South America, data on its safety and efficacy in cosmetic conditions are limited.

Currently there are no adequate, peer-reviewed clinical trials critically evaluating the efficacy of mesotherapy for dermatological and aesthetic indications. Proper controlled data and more evidences are needed before any recommendations. There are insufficient data evaluating the safety of the technique and pharmacology of the combination of herbal and allopathic medicines. The mechanism of action of many of the products is either doubtful or unknown and there are no clear guidelines on the dosage and efficacy of the products. Despite the boom in mesotherapy in the west, mesotherapy is a controversial therapy at the moment and it is still in its infancy. The CDC has recommended that "providers should adhere to recommend standard precautions, follow safe-injection practices with appropriate aseptic techniques and inject only FDA approved products that are prepared following guidelines to ensure sterility described in the FDA's good manufacturing practices"<sup>18,23</sup>.

### CONCLUSION

Till now there are no well controlled studies to prove the efficacy of this treatment modality. It is not approved by the FDA and scientific data to support its efficacy is lacking. No clear guidelines on the dosage and efficacy of these products exist. Additional clinical and experimental studies are necessary to establish the safety and efficacy of this treatment. More controlled and published studies in the literature are still awaited for the dermatologists to decide the future of this technique in their practice. Until such time the use of this technique will probably remain a subject of controversy.

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