

Spironolactone

It's been firmly established that alopecia. androgenetica, more commonly known as male pattern baldness or just pattern baldness, is initiated by dihydrotestosterone (DHT) attaching to the receptor sites on the hair follicles [1.2.3.4.].

Genetically, only the follicles on the top of the scalp are encoded with the receptor sites [5.6.24.], which explains why hair follicles along the side of the head and in the back of the head do not atrophy. The attached DHT on the receptor sites is perceived as a foreign body and the immune system begins to destroy the hair follicle, shortening the growth phase and causing the hair shaft to become progressively finer in texture [6]. In extreme cases, only a microscopic vellus hair remains. The good news is that these follicles have the inherent capacity to mature to their former size and thickness.

Encouraged with the success of finasteride to reduce the amount of DHT in the scalp of patients with male pattern baldness (MPB), doctors and scientific researchers took another look at existing medications that are known to act as anti-androgens.

There have to be stringent criteria for an anti-androgen that can be used to combat or even reverse pattern alopecia.

The ideal anti-androgen should have the following properties:

- (1) It must have potent anti-androgen activity;
- (2) It should selectively prevent or successfully compete with DHT without changing testosterone levels;
- (3) It should be effective topically, so it can be conveniently applied with minoxidil solutions or lotions and
- (4). It should be easily absorbed into the skin, but should have no systemic effects where it is not applied.

That's a tall order. Surprisingly, there is such a medication: spironolactone. And it's not a new medication [7.8.]. For over thirty years spironolactone has been used for its anti-androgenic effects in both males and females [14.15.]. Taken orally, it is such a potent anti-androgen that, although it is an effective anti-hypertensive drug, it is rarely used to treat men with hypertension because of its feminizing properties which can include painful gynecomastia [16.17.].

Applied topically, however, spironolactone does not have systemic side effects [12.18.19.20.]. Clinical evaluators of topical applications of spironolactone concluded, "as far as the topical use is concerned, spironolactone seems to be highly effective with absence of systemic effects"[19]. Physicians have been treating patients for MPB for well over fifteen years and there have not been any reports of systemic side effects.

Among its other properties as an anti-androgen, spironolactone is a potent competitive inhibitor of DHT at its receptor sites [21]. Therefore, spironolactone effectively prevents DHT from attaching to the receptor sites on the hair follicles [22].

As a result, the follicles no longer atrophy and can mature again to their normal size. And it does so without decreasing the circulating levels of DHT in the body. By comparison, finasteride inhibits the formation of DHT, causing troublesome side effects in many patients.

Multiple studies in various medical centers document that spironolactone is effective when applied topically [22]. In studying the anti-androgenic effects of topical spironolactone at the Department of Dermatology at New York University School of Medicine, researchers established that spironolactone concentrations of 0.01% to 5% produced a dose responsive decrease [23]. When both topical 5% spironolactone and topical 5% minoxidil are used daily in the treatment of MPB, the effects of the medications are synergistic. Whereas neither medication alone is particularly effective for the majority of patients, the success of the combination has been experimentally proven.

Do not combine medications containing spironolactone and minoxidil in the same container. The medications slowly react with each other, resulting in a compromise of their pharmacological activities. However, since it requires many hours for spironolactone and minoxidil to chemically react with each other, they can be consecutively applied to the scalp without compromising each other.

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