

Report on the effects of HFR x4 on human hair

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Synopsis

The product Hair Fall Rescue (HFR) x4 is a blend of different ingredients, most of which are derived from a plant source, and all of which have some form of beneficial effect upon human hair. A standard strength solution (SS) (as used in the product Keratinol) has been successfully used for some time as a treatment for androgenic hair loss, but this trial compared SS double standard (DS), and quadruple standard (QS). Clinical trials, and use over a period of six months, have shown that continuous use on appropriate subjects generally results in either or both a reduction in hair loss and an improvement in hair growth. This report explains how it is believed these ingredients work and the effect which each substance has on the hair and scalp.

Androgenic Alopecia (male pattern hairloss)

Androgenic Alopecia occurs to a marked degree in approx. 60% of males and 10% of females in the United Kingdom. It is caused by the effect of the main male hormone testosterone on genetically predisposed hair follicles in the frontovertex region of the scalp.

Within these follicles, testosterone is converted by the enzyme 5 alpha reductase into the much more potent androgen 5 alpha dihydrotestosterone, it is the effect of this hormone which inhibits the metabolism of the forming hair cells, resulting in hair of a deduced diameter. The anagen (growing) phase of the hair cycle will be of a shorter duration than for unaffected hairs and may last for a period of only months rather than the average of 3-5 years. When these hairs are lost they are replaced by finer hairs with an even shorter anagen phase. This process can continue until the hair follicles atrophy and are therefore unable to produce any further hair.

Most scalps, however, which appear totally bald contain hair follicles which are either still producing very fine hair, or are capable of producing it. These are fine vellus hairs, however, with a diameter below 40 microns, and are therefore no longer cosmetically useful.

How HFR x4 works

HFR x4 is composed of a variety of different ingredients all of which either directly or indirectly benefit hair loss stabilisation and some of which are stimulate hair growth.

The main active substance is an extract of the hop plant. Hop has been shown to be a strong inhibitor of 5-alpha reductase in the dermal papilla, and to increase hair cell proliferation, particularly on hairs suppressed by androgenic actively.

The degree of success is largely dependent on the strength of the genetic predisposition in the individual. If a male in his late teens or early twenties starts to lose his hair HFR x4 will have only a limited success at reducing the rate and degree of hair loss. On a slightly older male however, the response can be much more significant, with stabilisation of hair loss and improved hair growth being common reactions.

It is believed that the effect of the hop is to interfere with the conversion of testosterone to dihydrotestosterone, and as it is the latter which has the detrimental effect upon the hair rather than the former, there usually follows a positive response. Hop is also a good natural source of oestrogen, this may also aid the 'stimulating' effect of the plant.

Clover is also an excellent source of both Oestadiol and Oestrone, naturally occurring oestrogenic substances which have a positive effect upon the hair. HFR 4x contains extract of clover at a level where the quantity of oestrogenic substance will be significant.

Another very important ingredient is Methyl Nicotinate which is derived from the Vitamin B complex and is a powerful vasodilator, that is to say, it draws the blood to the surface of the skin in the area to which it is applied. The effect of this on the scalp is, firstly, to 'shock' any dormant hair follicles from the telogen phase into the anagen phase, and secondly to generally increase the blood supply to the given area, allowing the metabolism to increase and the hair to receive more blood than would normally be the case.

Research has shown that one of the major factors why some potentially beneficial substances for hair loss/growth are not as effective as theoretical and laboratory research dictates they should be is that in 'real life' situations, i.e. when people use the substances at home rather than under control conditions, only a relatively low proportion of the substance reaches the dermal papilla where proliferation of the hair cells occurs.

The main obstacles which lie in the way of successful penetration to the base of the hair follicle are:

- The unsuitability of the vehicle used, for example; water is poor at carrying substances down the hair follicle.
- The barrier posed by sebum which is composed of free fatty acids, squalene, wax esters, and other lipids which hinder the penetration of substances into the follicle.
- The high degree of absorption by dead skin cells, scales and flaking on the surface of the scalp. These tissues have a sponge like effect, resulting in a very high proportion of liquids which are applied to the scalp being taken up by the superficial layers of the epidermis rather than penetrating to the target site at the base of the hair follicle. This problem is not only seen in cases of dandruff, but also in sub-clinical dandruff. In a subject with dandruff the problem is frequently exacerbated because of the increased surface area which the liquid will cover before penetration into the hair follicle.

HFR x4 has been formulated to overcome these problems by using an alcohol compound which carries the active materials to the target site with a minimum of loss into other scalp tissues. HFR x4 also contains a highly effective anti-dandruff agent which clears the scalp of the dead skin cells and scale which would otherwise absorb much of the lotion and render it less effective. This is commonly observed problem in other hair loss treatments.

Another major innovation with HFR x4 is the incorporation of panthanol into the formulation. panthanol is the precursor of pantothenic acid which is a natural constituent of healthy hair and is used extensively in shampoos and conditioners such as the market leader Pantene because of its ability to penetrate into the cortex of the hair to reinforce the chemical bonds and strengthen the hair. When, however, it is used in a shampoo or a conditioner the product is diluted so much by the water needed in the cleaning and conditioning processes that the quantity of panthanol available to penetrate into the hair is minute, and therefore its effect is greatly diminished.

The panthanol used in HFR x4 is not diluted by water and reaches the hair at the strength at which it is incorporated into the product, this is extremely important as the effectiveness of panthanol is directly proportional to the level reaching the cortex, and therefore, in HFR x4 the panthanol can have an outstanding effect on the strength of the hair.

Blind study test results

Twenty two men with varying degrees of male pattern hair loss took part. The results after six months were as follows:

	No. of subjects	Reduced hair loss	Improved hair growth
Standard strength (SS)	8	5	2
Double strength (DS)	7	5	3
Quadruple strength (QS)	7	6	4

This was a blind study in that none of the subjects knew what was being used on them, but they all knew that the solution was 'active'. It would have been preferable to also use a non-active control (coloured water) as part of the study but understandably none of the subjects would accept this without considerable payment.

The results show that although there is not much of a difference in the effect on hair loss between the three solutions, QS has more than double the effect of SS on hair growth within the given period. The subjects were given 30ml bottles, and the solution was applied once a day.

Summary

- Clinical trials have shown that HFR x 4 lotion reduces excessive hair loss and encourages the regrowth of new hairs where the genetic tendency is moderate.
- The lotion has a highly stimulating effect on the scalp and hair follicles.
- In most cases the strength on the hair is increased.
- When HFR x4 is used in conjunction with Minoxidil and/or Finasteride there appears to be a synergistic effect which enhances the action of the drug.