New research finds way to restore colour to white hair following illness

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(PhysOrg.com) -- Scientists have discovered a way to potentially restore colour to white hair, new research in the British Journal of Dermatology reveals this month.

A number of skin disorders cause the hair to fall out, and when it re-grows, it is often white. For many patients, this is almost as distressing as the initial hair loss.

Melanin, the pigment in skin and hair, is stimulated by a group of peptide hormones collectively known as 'melanocyte stimulating hormone' or MSH.

Researchers at The University of Manchester and in Germany therefore examined whether a peptide called K(D)PT, which can be synthetically produced in the laboratory and is related to MSH, might have the same pigmentation stimulating effects as the naturally occurring MSH, and whether this could be used to restore colour to white hair after illness.

The team treated normal, isolated hair follicles from six women aged between 46 and 65 with different concentrations of K(D)PT. The research was carried out in the laboratory as it is not yet ready for direct use on patients.

In some of the test groups, the follicles were first treated with 'Interferon type II', commonly known as IFN-y, a proinflammatory stimulus that is linked to certain autoimmune disorders. The purpose of this was to

mimic the sort of inflammation that is present in disorders that cause the hair to fall out, including 'alopecia areata', a skin disease that causes hair loss, and 'telogen effluvium', a disorder that causes thinning of the hair, often after an accident, illness or extreme stress on the body.

Hair frequently loses colour after this sort of inflammation, so that when the hair returns, it is often white, regardless of its colour prior to hair loss.

The test groups were either pre-treated with IFN-g then given K(D)PT, pre-treated with K(D)PT then IFN-y, treated with K(D)PT alone, treated with IFN-y alone, or in the case of the control group, treated with distilled water.

The study found that K(D)PT increased the amount of melanin (pigment) in the hair follicle significantly when administered after pre-treatment with IFN-y.

This pre-treatment with a proinflammatory stimulus appeared to be necessary for the pigment effect to occur, as it was absent in the group where K(D)PT was administered first and IFN-g second. Likewise, IFN-y alone inhibited rather than stimulated pigment production, and K(D)PT used alone did not significantly alter the hair pigmentation. It is thought that as yet unknown receptors for K(D)PT are elevated or present only in tissue inflamed by substantial IFN-y activity.

As the purpose of pre-treating with IFN-y was to mimic the sort of inflammatory changes that may contribute to hair turning white, to then see whether K(D)PT could restore the hair colour, these findings are of particular use to the treatment of hair that has turned white following illness.

The study's senior author Dr Ralf Paus, of the University of Lübeck,

Germany, and the School of Translational Medicine at the University of Manchester, said: “Since this tripeptide displays interesting hair pigmentation-stimulatory activities under proinflammatory conditions, clinically, K(D)PT deserves to be explored as an innovative new anti-greying agent.

“Specifically, topical application of K(D)PT may become exploitable for the treatment of postinflammatory hair whitening that is often seen during the recovery phase of alopecia areata.”

Nina Goad of the British Association of Dermatologists said: “It’s important to note that this is laboratory research and not yet ready for use on patients. However, while the research is still at a very early stage, these findings could potentially pave the way for new therapies that restore colour to white hair. At the moment, this research only applies to people whose hair has turned white following illness, but this is an important step for such patients.”

At this early preclinical stage, it is not possible to say for definite if it would restore hair to its full, original colour, although this is thought to be a reasonable possibility. However, there may indeed be patients whose hair follicle pigmentary system has been damaged beyond repair, who might not profit at all from such a treatment. Most likely, treatment would have to be re-administered, as long as the pro-inflammatory stimulus that caused hair whitening persists.

Provided by University of Manchester