ABSTRACT

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JOB TITLE: Scientific Director

Podium Title: *Scalp microbiota shift in Alopecia Androgenetica: effects of Lindera strychnifolia roots extract as a natural solution for its modulation*

Background information (Short introduction)

Human scalp harbors a vast community of microbiotal mutualists. The role of microbial dysbiosis in scalp disease such as Androgenetic alopecia (AGA) has been recently hypothesized. However, little information is available with regards to the association between microbial population on the scalp and hair diseases related to hair growth.

Objective

Here, we investigated bacterial communities in 12 healthy and 12 AGA subjects at baseline (D0) and after 84 days (D84) of treatment by Lindera strychnifolia roots extract (LsR) for the AGA population. Using a phototrichogram, we also compared hair density and total hair counts in subjects receiving LsR treatment at baseline and after 84 days of treatment.

Methodology

The strategy used was based on high throughput DNA sequencing targeting the encoding 16S ribosomal RNA for bacteria and Internal Transcribed Spacer 1 ribosomal DNA for fungi.

Twelve males AGA subjects (40–65 years old) were recruited. They had chronic alopecia of androgenetic origin with a stage of III to IV according to the Norwood Hamilton classification.

After having characterized the scalp microbiota of 12 healthy and 12 AGA subjects, applications of a lotion with LsR extract at 1% and a placebo lotion were performed twice daily during 83 days on a randomised half-head (one product per half-head) among the AGA subjects.

Lindera strychnifolia roots extract (LsR) contains polyphenols (29.4% per dry matter), linderane (1.2% per dry matter) and linderalactone (1.8% per dry matter). The polyphenols content is mainly constituted by tannins (24% per dry matter) and catechin derivatives.

Results

An increase of Propionibacterium acnes with a decrease of Staphylococcus epidermidis relative abundance were noted in AGA subjects compared to control ones at D0. Lower abundance of Basidiomycota and higher proportion of Ascomycota, associated with lower proportion of Malassezia genus and increase of other fungal genus (Wallemia, Eurotium), implicated in the hair loss process, were observed in AGA scalp. Finally, lower proportion of M. globosa and M.

restricta were observed. 84 days treatment with LsR extract rebalances bacteriota and mycobiota for a healthy scalp and increased hair density.

Conclusion

Data from sequencing profiling of the bacterial population strongly support a different scalp microbial composition, highlighting differences between normal and AGA affected the scalp. Our results highlight, for the first time, the presence of a microbial shift on the scalp of subjects suffering from AGA. Findings suggested that 84 days of LsR treatment induced a reversible microbiome environment and increased hair density. This active ingredient offers a new natural solution for formulated products aiming to manage hair loss by acting on the scalp microbiome.

Why is this important to the industry?

Our data show the importance of the scalp microbiota to treat the problem of hair loss. Natural solution is an alternative to the medications such as Minoxidil and Finasteride, which only act on specific hair loss pathways.

Lindera strychnifolia roots extract appears to be new natural solution aiming to manage hair loss by acting on the scalp microbiome. At the same time, this extract induces a limitation of hair loss by acting on telogen and anagen phases.

Edith Filaire obtained her PhD from the University of Clermont-Ferrand in 1997. She has worked in major French universities (Lyon 1, Clermont-Fd, Orleans-Paris Saclay). From 2006 to 2018, she was full Professor and - co director of a Research laboratory at Orleans-Paris Saclay. Her research focused in nutrition- health and used a psychophysiological approach.

Currently, she is scientific director of the GREENTECH GROUP, including 4 companies (Biovitis, Greentech, Greensea and Mapric). In this Group, she develops thema about biology, neuroendocrinology and psychophysiology, nutrition-health, and the relationship between gut microbiota, pulmonary microbiota and lung cancer. She is author/co-author of more than 125 contributions to scientific international journals and 4-chapter books. Recently (7th November 2018: Lisbonn), she was nominated for the Women in Tech International Award that recognises people around the world who innovates, inspires and transforms the technology.