

CHANGES IN SOME SCALP SEBACEOUS
LIPIDS ASSOCIATED WITH THE USE OF AN
EFFICIENT ANTI-DANDRUFF SHAMPOO
AN *IN VIVO* STUDY.

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INTRODUCTION

As a sebum-rich skin site, the human scalp permanently hosts a resident microbiological lipophilic triad that comprises of 2 bacterial species (*Propionibacteria*, *Staphylococci*) and yeasts of the genus *Malassezia*. The latter is now a well-known cause of dandruff, a scalp condition that is prevalent in about 50% of humans, irrespective of gender and ethnicity*.

OBJECTIVE

Given that sebum is known to fuel this lipophilic yeast, the aim of the study is to record the biochemical changes that occur in the sebum composition *in vivo* during the successful alleviation of the dandruff condition, when applying a shampoo containing *Selenium Disulphide* (well-known active anti-fungal agent), over a 4 week-period.

*Bouillon C., Wilkinson J. (2005). *The Science of hair care. United States : Taylor & Francis, 727p*

MATERIALS AND METHODS

Study design:

Single blind monocentric study under dermatological control.



Population

32 healthy volunteers aged 18-54 years old, with slight to severe dandruff and slight sensitive scalp (*itching*).

Product

Shampoo containing Selenium Disulphide (SeS_2).

Methodology

3 applications per week

Controls at W-2, W0D0, W0D3, W1D10, W2D17, W3D24, W4D31, W6D45, W8D59 and W10D73.

Statistical data processing

Mixed ANOVA and adjusted multiple comparisons tests were applied using SAS software (*version 9.2 or higher*). Significance threshold was set up at $p\text{-value} \leq 0.05$.

Efficacy assessment

➤ Main criteria

- Global dandruff evaluation (including non-adherent and adherent dandruff) by a dermatologist using a grading scale (*from 0=no dandruff to 5=very large quantity*)
- Self evaluation of itching according to an ordinal scale ranging from 0 to 9 (*from 0=none to 9=very strong*).

➤ Secondary criteria

- Self-assessment of dandruff and itching with a grading scale (from 0=none to 9=significant)
- Transepidermal water loss (*TEWL*) measurement
- Analysis of lipids (Native Squalene (SQe), Peroxided Squalene (SQOOH), Free Fatty Acids (FFA), Glyceride)
- Subjective assessment by the subject (efficacy, quality of life, organoleptic characteristics)
- Tolerance of study products (collection of adverse events).

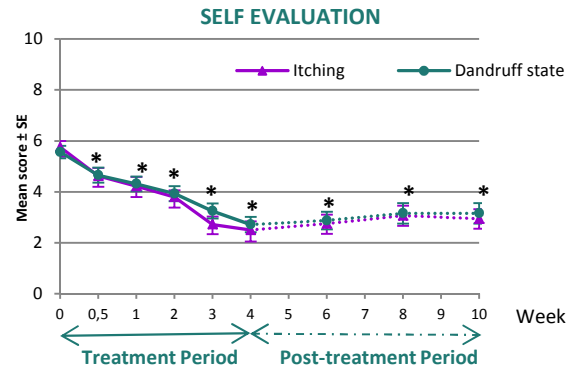
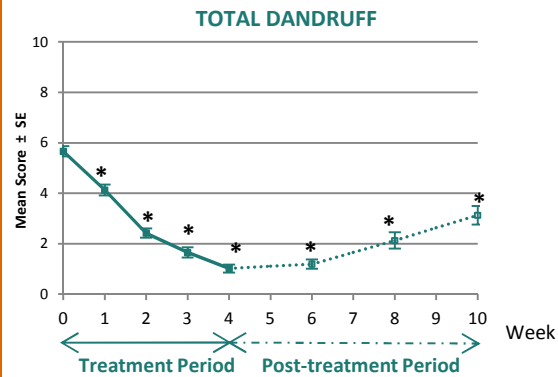
Baseline characteristics

(*Mean \pm SEM*) :

Gender	Age (years)	Dandruff Score (adherent + non adherent)
24 F - 8 M	34,2 \pm 10,6	5,7 \pm 0,2

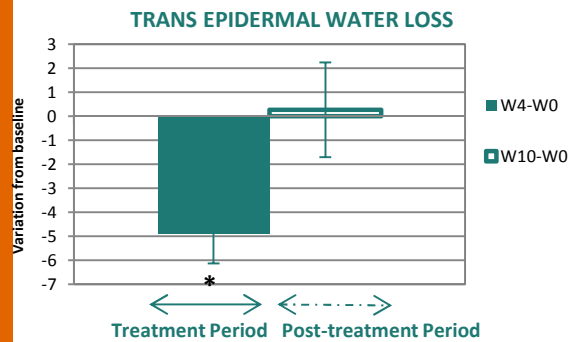
RESULTS

n = 32
* p-value ≤ 0.05

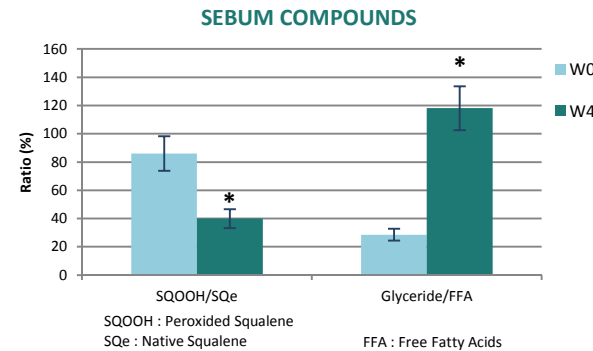


The SeS₂ shampoo showed an efficient anti dandruff activity, from the first application and throughout the treatment period and post treatment. This effect was also perceived by subjects, associated with an improvement of itching.

During the lasting period, dandruff condition remained at low levels albeit slowly recovering initial scores.



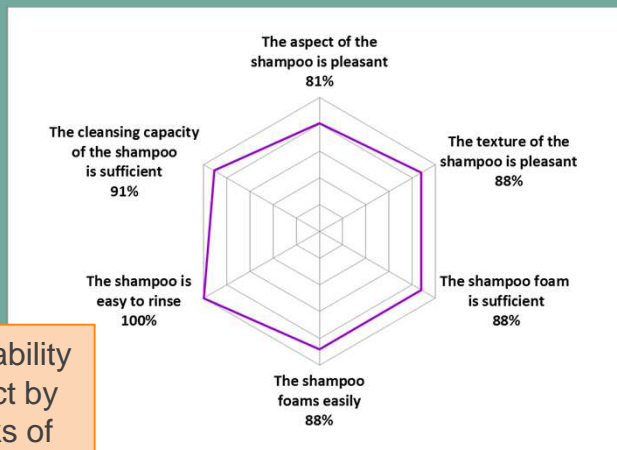
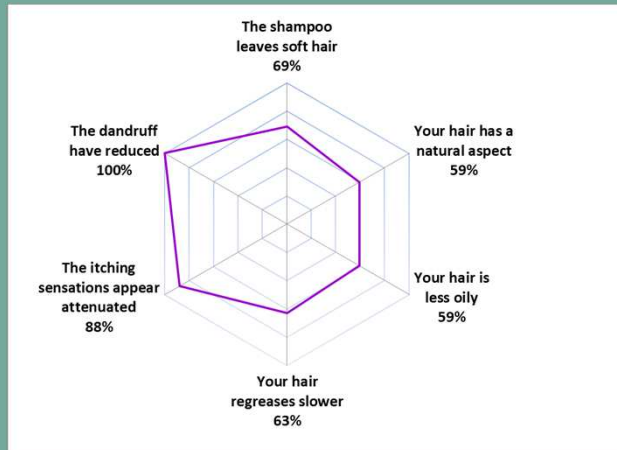
The TransEpidermal Water Loss significantly decrease after 4-week treatment in comparison to baseline.



Changes in the profile of scalp sebum compounds occurred during the treatment period. The ratio SQOOH/SQe decreased while the ratio Glyceride/FFA sharply increased.

RESULTS

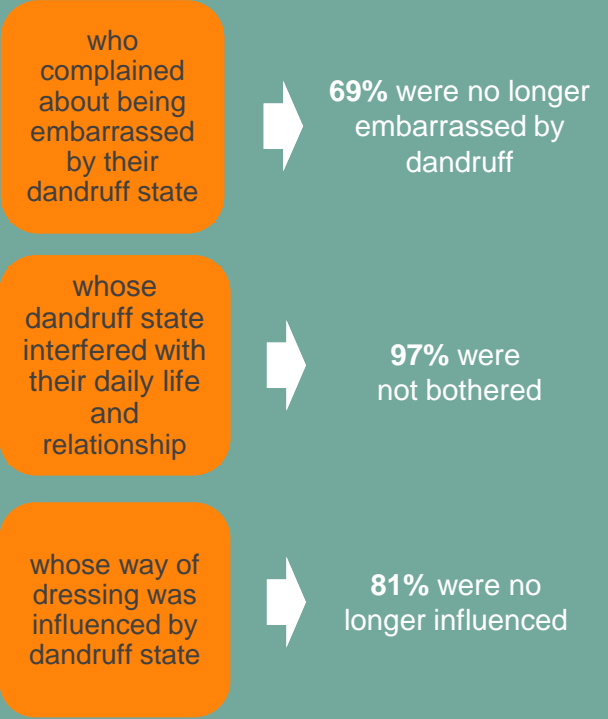
Overall satisfaction of the volunteers (n=32)



Good conditioning acceptability of the antidandruff product by the subjects after 4 weeks of treatment

Impact on well-being criteria

Among subjects at the end of treatment (W4)



The subjects see improvement on well being criteria

CONCLUSION

The results of the present work, highly suggest that the anti-fungal action of SeS_2 , in addition to clinically improving dandruff, strongly mitigates the well-known peroxidizing and lipolytic activities of the yeast *Malassezia*.