

## Smart drug delivery system that targets the epidermis and follicles

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Although drug delivery through the skin offers advantages over other administration routes, there are big challenges on target delivering actives in specific skin layers. Several strategies have been developed during the last decades attempting to overcome the skin barrier, however the technologies able to accomplish these tasks are still limited. The development of a topical delivery system requires a clever management of the actives and the interaction with the skin tissue.

Bicosome is an innovative lipid system formed by smart biocompatible nanostructures enclosed in a lipid bilayer. These smart structures are able to penetrate through the narrow intercellular spaces of the stratum corneum, and once there, they are able to deliver the actives to the specific layer of the skin required.

This study describes the development of a bicosome system that targets the epidermis and follicles to effectively deliver a sebostatic active compound and potentiate its effects in order to prevent the development of the Acne.

The results observed in this study evidence the capacity of bicosomes to penetrate the epidermis and follicles (fig.1) and potentiate the effects of the sebostatic active ingredient (Fig.2) decreasing the presence *P Acnes* in the skin surface (Fig. 3).

## References

- [1] Fernández E, Rodríguez G, Hostachy S, Clède S, Cócera M, Sandt C, et al. Colloids Surfaces B Biointerfaces. 131 (2015)102–7.
- [2] Shahmoradi Z, Irají F, Siadat AH, Ghorbaini A. J Res Med Sci. 18 (2013) 115–7.
- [3] Araviiskaia E, Dréno B. J Eur Acad Dermatology Venereol. 30 (2016) 926–35.

## Figures

Figure 1

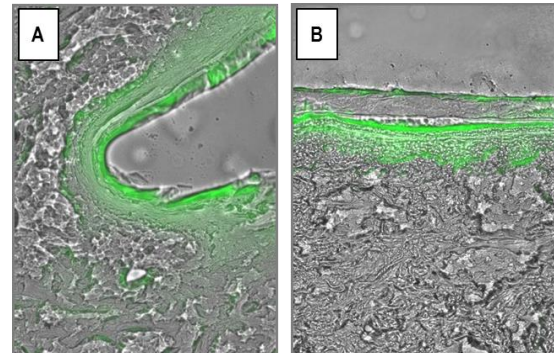


Figure 1. Fluorescence microscopy images of skin samples treated with the bicosome system containing the sebostatic agent, labelled with a fluorescent probe. The green areas show the penetration in the epidermis and follicle.

Figure 2

Sebum amount

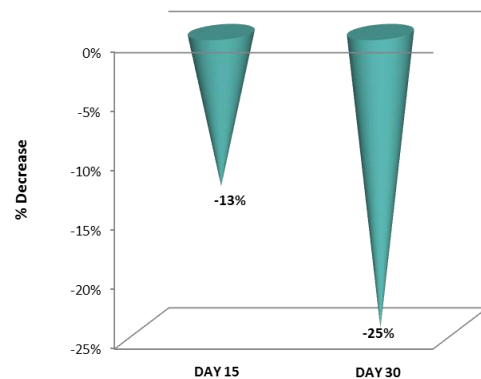


Figure 2. Decrease of sebum amount in the face of 20 volunteers treated with the bicosome system containing the sebostatic agent on Day 0 and Day 30 of the treatment. The sebum amount was determined with a Sebumeter® SM 815 (p value = 0,00).

Figure 3

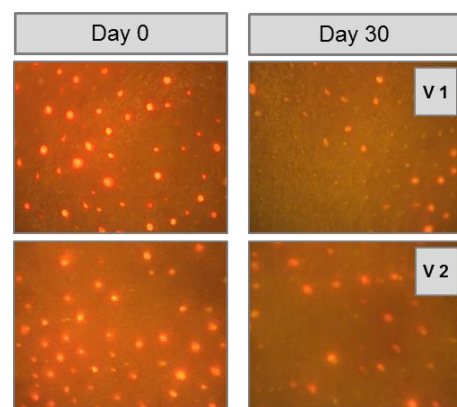


Figure 3. Visiopor® photographs of the face of two volunteers treated with bicosome system containing the sebostatic agent, showing the fluorescence in the pores, which indicates presence of *P Acnes*, on Day 0 and Day 30 of the treatment.