**Biodegradable carriers for intradermal delivery of glucocorticoids**

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Topical glucocorticosteroids (GCS) represent the basis for therapy of a wide range of inflammatory dermatoses, including psoriasis, atopic dermatitis, alopecia areata, lichen planus, *etc*. However, the improvement for their penetration through the stratum corneum and intradermal accumulation in the sites of GCS receptors remains actual. Low dermal bioavailability causes the need for repeated applications of conventional topical GCS formulations that contributes to the development of skin atrophy. The GCS delivery to the hair follicles opens up the possibility to localize and enhance its therapeutic effect, since a large number of GCS receptors are located in the outer root sheath of the follicle, as well as in the areas of the sebaceous glands and sweat ducts.

         Here, we report on a novel approach towards the GCS encapsulation and delivery to the pilosebaceous reservoir, which can improve the topical application of such hormonal drugs. It involves the use of vaterite particles, which are biodegradable and biocompatible. We demonstrate the possibility of effective immobilization of various GCSs into the porous vaterite matrix. The obtained carriers displayed a good cellular uptake together with the low cytotoxicity when studied in fibroblasts *in vitro*. Efficient intrafollicular accumulation of the carriers after their US-assisted topical application *in vivo* in rats provided the delivery of the drug molecules to targeted receptors. Gradual degradation of the vaterite matrices inside the hair follicles granted *in situ* liberation of the payload. The resulting enhancement of a local corticosteroid’s concentration in skin appendages could provide the lowering of the dose and frequency of the GCS application. Thus, it might contribute to the reduction of the side effects associated with its administration.

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