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Smart lipids for improved delivery of antioxidants

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Drug delivery is a challenging step to introduce the active pharmaceutical ingredients to the targeted organs, cells or receptors. Nanocarriers, e.g. liposomes, nanocrystals or lipid nanoparticles are known to be a suitable strategy to improve the delivery of actives. The delivery of antioxidants is also challenging, because to low doses are ineffective and too high doses are pro-oxidative. Tailor-made drug release is therefore highly important. Up to date an efficient drug delivery system, providing tailor-made drug release profiles for antioxidants, that is suitable for different routes of administration, e.g. dermal, oral, ocular etc., is missing. Systematic studies with different lipid matrix systems and dyes or quantum dots as model active will be produced and their properties will be investigated by various *in-vitro* and *ex-vivo* characterization methods. Characterisation methods involve: characterization of size, size distribution, surface charge, determination of physical stability and chemical stability, determination of drug release and dermal penetration, interaction with vehicle/medium, interaction with cells and uptake into cells and influence of vehicle on dermal penetration and drug release and the influence of the matrix composition on the properties and performance of lipid nanoparticles..

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