SNEDDS exhibited 1.54 times higher drug permeation amount and 0.57 times lower drug excretion amount than that of market tablets at 4 hours ($p < 0.01$). Further, the cytotoxicity study performed on Caco-2 cell revealed that the cell viability was lower in SNEDDS (92.22% ± 4.18%) compared with the market tablets (95.54% ± 3.22%; $p > 0.05$, i.e., 0.74). The formulation was found stable with temperature variation and freeze thaw cycles in terms of droplet size, zeta potential, drug precipitation and phase separation. Crystalline glimepiride was observed in amorphous state in solid SNEDDS when characterized through DSC, PXRD, and FT-IR studies. The study revealed successful formulation of SNEDDS for glimepiride.

Rodriguez-Luna, A. et al. (2017). "Topical application of glycolipids from isochrysis galbana prevents epidermal hyperplasia in mice." *Mar Drugs* 16(1):2.

Chronic inflammatory skin diseases such as psoriasis have a significant impact on society. Currently, the major topical treatments have many side effects, making their continued use in patients difficult. Microalgae have emerged as a source of bioactive molecules such as glycolipids with potent anti-inflammatory properties. We aimed to investigate the effects of a glycolipid (MGMG-A) and a glycolipid fraction (MGDG) obtained from the microalga Isochrysis galbana on a TPA-induced epidermal hyperplasia murine model. In a first set of experiments, we examined the preventive effects of MGMG-A and MGDG dissolved in acetone on TPA-induced hyperplasia model in mice. In a second step, we performed an in vivo permeability study by using rhodamine-containing cream, ointment, or gel to determinate the formulation that preserves the skin architecture and reaches deeper. The selected formulation was assayed to ensure the stability and enhanced permeation properties of the samples in an ex vivo experiment. Finally, MGDG-containing cream was assessed in the hyperplasia murine model. The results showed that pretreatment with acetone-dissolved glycolipids reduced skin edema, epidermal thickness, and pro-inflammatory cytokine production (TNF-alpha, IL-1beta, IL-6, and IL-17) in epidermal tissue. The in vivo and ex vivo permeation studies showed that the cream formulation had the best permeability profile. In the same way, MGDG-cream formulation showed better permeation than acetone-dissolved preparation. MGDG-cream application attenuated TPA-induced skin edema, improved histopathological features, and showed a reduction of the inflammatory cell infiltrate. In addition, this formulation inhibited epidermal expression of COX-2 in a similar way to dexamethasone. Our results suggest that an MGDG-containing cream could be an emerging therapeutic strategy for the treatment of inflammatory skin pathologies such as psoriasis.

Sala, M. et al. (2017). "Diclofenac loaded lipid nanovesicles prepared by double solvent displacement for skin drug delivery." *Pharm Res* 34(9):1908–1924.

PURPOSE: Herein, we detail a promising strategy of nanovesicle preparation based on control of phospholipid self-assembly: the Double Solvent Displacement. A systematic study was conducted and diclofenac as drug model encapsulated. In vitro skin studies were carried out to identify better formulation for dermal/transdermal delivery. METHODS: This method consists in two solvent displacements. The first one, made in a free water environment, has allowed triggering a phospholipid preorganization. The second one, based on the diffusion into an aqueous phase has led to liposome formation. RESULTS: Homogeneous liposomes were obtained with a size close to 100 nm and a negative zeta potential around −40 mV. After incorporation