of acid diclofenac, we obtained nanoliposomes with a size between 101 ± 45 and 133 ± 66 nm, a zeta potential between 34 ± 2 and 49 ± 3 mV, and the encapsulation efficiency (EE%) was between 58 ± 3 and 87% ± 5%. In vitro permeation studies showed that formulation with higher EE% displayed the higher transdermal passage (18,4% of the applied dose) especially targeting dermis and beyond. CONCLUSIONS: Our results suggest that our diclofenac loaded lipid vesicles have significant potential as transdermal skin drug delivery system. Here, we produced cost effective lipid nanovesicles in a merely manner according to a process easily transposable to industrial scale. Graphical Abstract.

Salamanca, C. H. et al. (2018). "Franz diffusion cell approach for pre-formulation Characterisation of ketoprofen semi-solid dosage forms." *Pharmaceutics* 10(3):148.

This study aimed to evaluate and compare, using the methodology of Franz diffusion cells, the ketoprofen (KTP) releasing profiles of two formulations: A gel and a conventional suspension. The second aim was to show that this methodology might be easily applied for the development of semi-solid prototypes and claim proof in preformulation stages. Drug release analysis was carried out under physiological conditions (pH: 5.6–7.4; ionic strength 0.15 M; at 37°C) for 24 hours. Three independent vertical Franz cells were used with a nominal volume of the acceptor compartment of 125 mL and a diffusion area of 2.5 cm^2. Additionally, two different membranes were evaluated: A generic type (regenerated cellulose) and a transdermal simulation type (Strat-M®). The KTP permeation profiles demonstrated that depending on the membrane type and the vehicle used, the permeation is strongly affected. High permeation efficiencies were obtained for the gel formulation, and the opposite effect was observed for the suspension formulation. Moreover, the permeation studies using Strat-M membranes represent a reproducible methodology, which is easy to implement for preformulation stage or performance evaluation of semi-solid pharmaceutical products for topical or transdermal administration.

Sharma, V. and K. Pathak (2016). "Effect of hydrogen bond formation/replacement on solubility characteristics, gastric permeation and pharmacokinetics of curcumin by application of powder solution technology." *Acta Pharm Sin B* 6(6):600–613.

The present research aimed to improve the dissolution rate and bioavailability of curcumin using the potential of liquisolid technology. Twelve drug-loaded liquisolid systems (LS-1 to LS-12) were prepared using different vehicles (PEG 200, PEG 400 and Tween 80) and curcumin concentrations in vehicle (40%, 50%, 60% and 70%, w/w). The carrier [microcrystalline cellulose (MCC) PH102] to coat (Aerosil®) ratio was 20 in all formulations. The systems were screened for precompression properties before being compressed to liquisolid tablets (LT-1 to LT-12). Post compression tests and in vitro dissolution of LTs were conducted and the results compared with those obtained for a directly compressed tablet (DCT) made of curcumin, MCC PH102 and Aerosil®. LTs exhibited higher cumulative drug release (CDR) than the DCT and the optimum formulation, LT-9 (made using Tween 80), was studied by powder XRD, DSC, SEM and FTIR. Ex-vivo permeation of curcumin from LT-9 through goat GI mucosa was significantly ($P < 0.05$) enhanced and its oral bioavailability was increased 18.6-fold in New Zealand rabbits. In vitro cytotoxicity (IC50) of LT-9 towards NCL 87 cancer