Effect of Microneedle Treatment on the *In-vitro* Skin Permeation of Vismodegib

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**INTRODUCTION**

Vismodegib (MW 421.3, log P 2.7) was approved by FDA in January 2012 to treat advanced basal cell carcinoma. Phase I clinical trials proved that vismodegib effectively treated locally advanced or solid tumor with only minor side effects [1]. Microneedles can be used to overcome the rate limiting barrier for skin delivery, allowing the drug to diffuse through the micropores created on skin [2]. This project investigated the *in-vitro* delivery of vismodegib across dermatomized porcine ear skin mounted on Franz diffusion cells.

**METHODOLOGY**

Donor solution (100 µL) consisted of vismodegib 7 mg/mL, dissolved in propylene glycol. Receptor chamber was filled with 10 mL phosphate buffer (polyethylene glycol 400 (50:50 v/v)) to maintain sink conditions. Samples were taken at 0 h, 1 h, 2 h, 4 h, 6 h, 10 h, 24 h, and analyzed using a gradient reverse-phase high-performance liquid chromatography method. Maltose microneedles were 500 µm long and were stacked in 3 layers. Metal microneedle array is either 1200 µm long or 1500 µm long (AdminPrT-M).

**RESULTS**

**CONCLUSIONS**

Vismodegib was delivered across dermatomized porcine ear skin and delivery was enhanced by microneedles and affected by the skin equilibration time.

**REFERENCES**
