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**Elongate microparticles for enhanced drug delivery to ex vivo and in vivo pig skin.**

*Raphael AP, Primiero CA, Ansaldo AB, Keates HL, Soyer HP, Prow TW., J Control Release. 2013 Nov 28;172(1):96-104. doi: 10.1016/j.jconrel.2013.07.025.*

### **ABSTRACT**

The delivery of therapeutics and cosmaceuticals into and/or through the skin is hindered by epidermal barriers. To overcome the skin's barriers we have developed a novel cutaneous delivery method using high aspect ratio elongate microparticles (EMPs). Using ex vivo and in vivo pig skin we assess the penetration and delivery characteristics of the elongate microparticles. With reflectance confocal microscopy we observed that the elongate microparticles successfully penetrated the epidermis and upper dermis. Delivery was then assessed using two different length populations of EMPs, comparing their delivery profile to topical alone using sodium fluorescein and confocal microscopy. We observed a relatively uniform and continuous delivery profile in the EMP treated area within the upper layers of the skin--up to seven times greater than topical alone. Finally, we delivered two therapeutically relevant compounds (Vitamins A and B3), showing enhanced delivery using the EMPs. To our knowledge this is the first report using high aspect ratio elongate microparticles in this manner for enhanced topical delivery to the skin.