Transdermal Delivery of FITC-BSA Mediated with “Skinroller”
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Introduction
As a non-invasive route, transdermal immunization has attracted more attention in the past few decades. However, the compact arrangement of the stratum corneum presents a great hindrance to deliver large molecules. From the requirements for transdermal immunization, delivery of macromolecules through and into the skin becomes significantly important. In this study, the combination of “skinroller” and novel formulations was used to study the transport of FITC-BSA (68 kDa) through the baby-porcine skin in-vitro.

Results and Discussion
After disrupting the skin with the “skinroller” (200 m), the permeability of the stratum corneum was enhanced, and FITC-BSA in all formulations transported through the stratum corneum within 15 minutes. By use of confocal microscopy, the pathway of FITC-BSA transported through the skin was tracked. Most of FITC-BSA transported through the stratum corneum along the microchannels created by the “skinroller”, and then in the viable epidermis FITC-BSA began diffusing around the microchannels and into the deeper region. Of all the donor formulations, FITC-BSA in PC-liposome suspension and double-encapsulation formulation showed higher penetration depth and greater fluorescent intensity on the same skin depth.

Conclusion
This work demonstrates that the combined use of “skinroller” and novel formulations shows high efficiency to deliver a 68 kDa protein through the porcine skin in-vitro, which might help in regulating transdermal delivery of macromolecules.

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