Acta Pharmaceutica Sinica, 36, 140-144 (2001).

Transdermal microparticle delivery by a supersonic-Helios™ gun system

Jin Yi[1], Uchida Masaki(内田昌希)[2], Wang Cheng-fa[3], Natsume Hideshi (夏目秀視)[2,4], Sugibayashi Kenji(杉林堅次)[2,4], Morimoto Yasunori(森本雍憲)[2,4]

[1]College of Pharmacy, Zhejiang University, Hangzhou 310031, China; [2]Faculty of Pharmaceutical Sciences, Josai University, Saitama 350-0295, Japan; [3]Zhejiang Kangyu Pharmaceutical Co. Ltd., Dongyang 322118, China; [4]Research Institute of TTS Technology, Saitama 350-0295, Japan

AIM. To investigate the effect of particle size and high speed flow of helium gas on the systemic absorption of indomethacin using a needle-less injection system. METHODS. Poly-L-lactic acid microspheres containing indomethacin was prepared by the o/w solvent evaporation technique. After anesthetizing the male hairless rat, microspheres filled in the tube cartridge was accelerated by a stream of helium gas at various velocity in the Helios™ gun system, and then was introducedto the abdominal skin.

RESULTS. Introduction of indomethacin to the hairless rat skin was proportionally increased with enhancing the helium pressure (supersonic flow). Bioavailability and C_{max} were also dependent on the helium pressure.

CONCLUSION. This method can be used to deliver the powered drug and/or microparticulate systems into the skin tissue and the systemic circulation.