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(57) Abstract :

The present invention relates to matrix-type transdermal patches containing glimepiride for sustained drug delivery in the management of type-2 diabetes mellitus. The patches were prepared by solvent casting using hydroxypropyl methylcellulose K15M as hydrophilic polymer, Eudragit RS-100 as hydrophobic polymer, and dibutyl phthalate as plasticizer. Six formulations with varying polymer ratios were evaluated for physicochemical properties and in-vitro drug release using Franz diffusion cells. The optimized formulation F4 containing HPMC and Eudragit RS-100 in a ratio of 75:125 milligrams exhibited satisfactory mechanical strength, folding endurance of 198, drug content of 98.6 percent, moisture uptake of 4.9 percent, and sustained drug release of 92.4 percent over 24 hours. Release kinetics followed zero-order ($R^2 = 0.989$) and Higuchi model ($R^2 = 0.984$), with a Korsmeyer-Peppas exponent of 0.61, indicating non-Fickian diffusion.

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