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Pharmacokinetic parameters of iontophoretic delivery of alfuzosin hydrochloride

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Iontophoresis is simply defined as the introduction of a direct electrical current so that the ions of soluble salts penetrate into the tissue of the body for therapeutic purposes. Mechanism of iontophoretic transport of drugs across the skin involves diffusion, migration or electro osmosis. It is based on the physical phenomenon that "like charges repel and opposite charges attract". At physiological pH, human skin has a slight negative charge, implying that positively charged moieties like Na^+ molecules will be more easily transported, as they attempt to neutralize the charge in the skin to maintain electro neutrality. Therefore movement of ions occurs from anode to cathode electron osmotically, thus enhancing the flux of cationic drugs. Alfuzosin hydrochloride an alpha adrenoreceptor antagonist used for symptomatic relief of benign prostatic hyperplasia was selected as model drug. Its low bioavailability, less half life and extensive first pass metabolism results in repeated dosing, which can be bypassed by transdermal delivery. In-vivo studies were performed on rabbits and compared with oral suspension. Plasma samples were analysed by LCMS and pharmacokinetic parameters were calculated. AUC and $T_{1/2}$ were increased by 3.06 times and 3.03 times respectively, showing effective transdermal delivery. Histopathological studies revealed changes in dermis indicating effect of terpenes and iontophoresis. These results showed iontophoresis technique is an effective tool in enhancing transdermal delivery of Alfuzosin hydrochloride.

Biography

Prasanthi Domaraju is working as an assistant professor (pharmaceutics) in G.Pulla reddy college of pharmacy, Hyderabad, India. She has 9 years of teaching experience and has published 7 articles in international journals and presented in nearly 10 national and international conferences. She is Life member of APTI.

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