



Research article

Optimization and characterization of transdermal film of curcumin containing natural oils as permeation enhancer by response surface methodology

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Abstract

The purpose of present study was to develop optimized transdermal drug delivery system of curcumin by utilizing response surface methodology to study the combined effect of independent variables like concentration of hydroxyl propyl methyl cellulose, ethyl cellulose and natural oils as permeation enhancers which significantly influenced characteristics like elongation and in vitro drug permeation. Linear model fitted the best for all the formulations. According to Derringer's desirability prediction tool, the composition of optimized film containing peppermint oil was found to contain 200mg of HPMC, 150mg of EC, and 0.35ml of peppermint oil and in case of films containing jojoba oil, the composition of optimized film was, 300mg of HPMC, 100.2mg of EC, and 0.39ml of jojoba oil. Under these conditions, the optimized patch exhibited a predicted value of % elongation and in vitro drug permeation of 66.44%, 85.50%, respectively (peppermint oil) and 79.7, 97.1%, respectively (jojoba oil). Jojoba oil showed better characteristics than peppermint oil and can be better substitute for synthetic permeation enhancers. FTIR was also performed which revealed no interaction between drug and excipients. It can be concluded that if proper optimization is carried out for herbal formulations, they can be the first choice for people compare to synthetic drugs.