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Combined Effect of Capsaicinoids and Low Frequency Ultrasound on the Enhancement of Transdermal Drug Delivery

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Capsaicinoid Ultrasound Transdermal delivery

Indomethacin

(Sonophoresis; phonophoresis)

Capsaicin

Nonivamide

Cellulose

Franzvertical diffusion cell

(flux)

Thermodynamic activity

pH 7.4

Capsaicin

Capsaicin

Azone

Indomethacin

The study was conducted in vitro to investigate the changes of indomethacin transdermal permeation pretreated by capsaicin and nonivamide, two compounds chemically similar to Azone. The combined effect of low frequency ultrasound (20 kHz) and enhancers on the indomethacin across nude mouse skin. Enhancement effects of both analogues were very similar and depended predominantly on the concentration tested. Histological examination coupled with visual scores indicated the safety of capsaicin and nonivamide on skin structure. Simultaneous application of ultrasound and enhancers significantly increased skin permeation of indomethacin compared with either ultrasound or enhancers alone. Better effect was obtained by the combination with capsaicin than nonivamide.