HEB

IN VITRO EVALUATION OF CHILI EXTRACT LOADED MICROEMULSION FOR ENHANCED TRANSDERMAL DELIVERY WITH REDUCED SKIN IRRITATION

CASS

Phunsuk Anantaworasakul[1], Chadarat Ampasavate[1, 2]

[1]*Department of Pharmaceutical Sciences, Faculty of Pharmacy, Chiang Mai University, Chiang Mai 50200 Thailand*

[2]*Center for Research and Development of Natural Products for Health, Chiang Mai University, Chiang Mai, 50200 Thailand*

Address for Correspondence: serviceheb@gmail.com

Capsaicin has been approved for treatment of muscle and neuropathic pain. A major problem of capsaicin in chili extract formulation is the severe skin irritation causing skin redness, burning and tingling sensation [1, 2]. Attempt to reduce side effects and increase the skin absorption rate had been pursued through microemulsion (ME) formation as a transdermal drug delivery system [3]. High concentration of capsaicin (0.25%) from chili extract was encapsulated in microemulsion. In this study, the microemulsion formulations consisting of isopropyl myristate (oil phase), water (aqueous phase) and mixture of surfactants and co-surfactants as Tween 80, Span 80, ethanol, propylene glycol were prepared and characterized regarding the transparency, particle size, size distribution, and zeta potential of the developed ME. Transdermal enhancement ability was demonstrated by capsaicin determination in the *in vitro* skin permeation and skin retention studies. In addition, the minimized irritation by chili extract loaded ME compared to chili extract solution at the same concentration was observed from the hen's egg test chorioallantoic membrane assay (HET-CAM) [4]. The present study noted that the moderate irritation of chili extract solution (IS = 6.77 ± 0.13) could be minimized to the mild level by chili extract encapsulation in the ME which exhibited the IS score of 3.17 ± 0.02. Therefore, the developed chili extract loaded ME was proven as a potential colloidal carrier for chili topical products with mild irritation.

References

[1] Groninger H, Schisler RE. Topical capsaicin for neuropathic pain# 255. Journal of palliative medicine. 2012;15(8): Page No: 946-7.

[2] Reyes-Escogido MdL, Gonzalez-Mondragon EG, Vazquez-Tzompantzi E. Chemical and pharmacological aspects of capsaicin. Molecules. 2011;16(2): Page No: 1253-70

Access this Article Online	
http://heb-nic.in/cass-studies	Quick Response Code:
Received on 11/09/2019 Accepted on 29/09/2019	