



In Vitro Permeation Studies of Commercially available Diclofenac Sodium Gel (Sample Analysis Using LC-MS/MS) Through the Two Different Shed Snake Skins Obtained from Various Regions of Sultanate of Oman: a Pilot Study

M. BALAMURUGAN *¹, Afaf M. WELI², Giles EDWARDS³,
Ahmed Al-HARRSI⁴ & Zainab Al-KHARUSI²

¹ Faculty of Pharmaceutical Sciences, UCSI University, Kuala Lumpur Campus, Malaysia.

² School of Pharmacy, College of Pharmacy and Nursing, University of Nizwa, Sultanate of Oman.

³ DARIS Research Center, University of Nizwa, Sultanate of Oman.

⁴ College of Arts and Sciences, University of Nizwa, Sultanate of Oman.

SUMMARY. The use of the shed snake skins as biomembranes in numerous *in vitro* permeation studies of topical preparations has been reported to have many advantages, since it shows similarity to human *stratum corneum*. In this study two shed snake skins *i.e.* *Bitis arietans* (sample-A), and *Echis omanensis* (sample-B) were taken for the evaluation with the aim of determining its permeation characteristics, and to find out the possibilities of employing the same as a model biomembrane for the permeation studies of the various topical and transdermal formulations, using a marketed diclofenac sodium gel as a model drug in the modified diffusion cells. The permeation studies clearly showed that the shed skin of *B. arietans* was much more permeable than that of *E. omanensis*. The SEM analysis showed that both the shed skins have differences in structure, rigidity and in the size of the micropits. The use of high performance liquid chromatography coupled to tandem quadrupole mass spectrometry proved to be an ideal analytical instrument of choice for quantitation of the diclofenac sodium that diffused across the snake skin in this particular study.

KEY WORDS: Diclofenac gel, Permeation studies, Shed snake skin, Tandem quadrupole mass spectroscopy.

* Author to whom correspondence should be addressed. *E-mail:* manickambalamurugan19@gmail.com