

In vitro Study of the Influence of Promoters in the Permeation of Ketorolac †

Dana Pegoraro ¹, Emilia Diez ¹, Paula Pirchio ¹, Silvina Cabañez ¹, Manuel Solari ², María Alvarez ¹, Mónica Olivella ^{1,*}

¹ Departamento de Química, Facultad de Química, Bioquímica y Farmacia, Universidad Nacional de San Luis

² Departamento de Farmacia, Facultad de Química, Bioquímica y Farmacia, Universidad Nacional de San Luis. Instituto de Química de San Luis (INQUISAL-CONICET)

* Correspondence: olivellamonica@gmail.com (M.O.);

† Presented at The Sixth International Meeting of Pharmaceutical Sciences (RICiFa), November 10-12, 2021, Córdoba, Argentina

Received: 26.04.2022; Revised: 4.05.2022; Accepted: 6.05.2022; Published: 8.05.2022

Abstract: We set out to study *in vitro* permeation of the systems formed by the pharmacologically active ingredient (IFA) ketorolac (KTR) and the promoters ethanol (Et) and propylene glycol (PG), at different concentrations through synthetic membranes of cellulose acetate, in aqueous solutions (KTR 2%, pH = 6.00). Experiments were performed in a Microette automatic sampler using Franz –type vertical cells of diffusion. The reception well-contained phosphate buffer saline (PBS, pH 7.4). All the system was maintained at 32 ± 0.5 °C through water circulation and magnetic agitation (180 rpm). Samples were quantified by HPLC/UV, monitoring at $\lambda = 314$ nm. Physico-chemical parameters were obtained by Fick's first law: flux (Jm), permeation coefficient (P), and diffusion (D). The permeation of the drug after 8 hours was 26.85%, 31.97%, and 34.60% for the KTR-water, KTR-Et 5%, and KTR-PG 10% systems, respectively. The KTR-Et 10% and KTR-PG 5% systems did not show significant differences concerning KTR-water. Evaluating Jm, P, and D, the KTR-PG 10% and KTR-Et 5% systems were 1.77 and 1.30 orders higher than KTR-water, respectively. Our results indicate that modifying promoter concentration and the composition of the formed systems had a positive effect on the IFA permeation.

Keywords: Ketorolac; permeation; promoters.

© 2022 by the authors. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Funding

This research was funded by UNSL.

Acknowledgments

To the laboratory of Control de Calidad and Laboratory of Química Física, FQByF, UNSL.

Conflicts of Interest

The authors declare no conflict of interest.