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MICROEMULSION FOR IMPROVED SKIN DELIVERY AND *IN VIVO* ANTI-INFLAMMATORY EFFECT

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Author has designed a Micro Emulsion (ME) containing Ketoprofen (KET) for anti- inflammatory effect evaluated using the rat paw edema model. The ME was prepared by adding Propylene Glycol (PG) loaded with 1% KET/water (3:1, w/w), to a mixture of sorbitan monooleate and polysorbate 80 (47.0%) at 3:1 (w/w) and canola oil (38.0%). The physicochemical characterization of KET-loaded ME involved particle size and zeta potential determination, entrapment efficiency, calorimetric analysis, and *in vitro* drug release. The *in vivo* anti-inflammatory study employed in male Wistar rats. Measurement of the foot volume was performed using a caliper immediately before and 2, 4 and 6 h after injection of Aerosil. KET-loaded ME showed particle size around 20nm, with zeta potential at -16mV and entrapment efficiency at 70%. Moreover, KET was converted to the amorphous state when loaded in the formulation and it was shown that the drug was slowly released from the ME. Finally, the *in vivo* biological activity was similar to that of the commercial gel, but ME better controlled edema at 4h. These results demonstrated that the ME formulation is an alternative strategy for improving KET skin permeation for anti-inflammatory effect. Furthermore, our findings are promising considering that the developed ME was loaded with only 1% KET and the formulation was able to keep a similar release profile and *in vivo* effect compared to the commercial gel with 2.5% KET. Therefore, the KET-loaded developed herein ME is likely to have a decreased side effect compared with that of the commercial gel, but both presented the same efficacy.

BIOGRAPHY

Medina WSG completed her Doctorate at the University of São Paulo and did her Postdoctoral studies at the Faculdade de Ciências Farmacêuticas de Ribeirão Preto, Brazil. She is the Director of Scientific Research at the University Center Padre Albino (UNIFIPA), an important university services organization in the interior of Brazil. She is Professor at UNIFIPA for Medicine, Biomedicine and Nursing courses. She is the Coordinator of the Specialization Course in Aesthetic Health at UNIT, unit of Maceió during 2012 to 2014. She is a Member of the American Association of Pharmaceutical Scientists (AAPS), Advisory Director in Toxicology of INB (National Institute of Biomedicine), Advisory Director in Aesthetic Biomedicine of INB and Member of Brazilian Association of Pharmaceutical Sciences (ABCFarm) and Supervisor of the Student Chapter UNIFIPA since 2014. She has published more than 17 articles in renowned magazines and has acted as a Member of the renowned Editorial Board.

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