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**NANO-BIORESORBABLE POLYMER SPHERES AS CARRIERS
FOR TRANSDERMAL DELIVERY OF KETOPROFENE**

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The transdermal delivery system provides a highly efficient, safe, and easy to use method for delivering active ingredients and other compounds to the body through intact skin, thereby offering many other advantages over the traditional dosage forms. Ketoprofen is a poorly water-soluble non-steroidal antiinflammatory drug and widely used for the acute and long-term treatment of rheumatoid arthritis and associated diseases.

The purpose of the study presented in this paper has been to examine the possibility of the synthesis of a new nanoparticulate system for drug delivery of ketoprofen suitable for transdermal applications. Multi-scale design of a transdermal drug delivery system, from the molecular or nano scale through the macroscopic scale, was analyzed.

The obtained nano particles contain ketoprofen-loaded spheres of poly(D,L-lactide acid) (PDLLA). Characterization was performed with wide-angle X-ray structural analysis (XRD), infrared spectroscopy (FT-IR), field-emission scanning electron microscopy (FESEM), high performance liquid chromatography (HPLC) and particle sized distribution (PSD) methods. XRD and FT-IR analyses confirmed that the ketoprofen is immobilized into PDLLA. The encapsulation of ketoprofen into the PDLLA nanoparticles was highly accomplished and the drug loading efficiency was 75%. The observed average particle dimension (d₅₀) of ketoprofen-loaded nano particles was 63 nm.