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## Formulation and Evaluation of Niosome Loaded Transdermal Patches for The Treatment of Osteoarthritis (OA)

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### ABSTRACT

TDDS are one of the most widely investigated routes of non-invasive drug delivery into the body through the skin. TDDS influence the delivery of various therapeutic agents, especially in pain management, hormonal therapy, and treatment of various diseases. Osteoarthritis (OA) is a type of degenerative joint disease that results from breakdown of joint cartilage and underlying bone. The most common joints affected by osteoarthritis are the small joints of the hands and feet, the hip joint, and the knee joint. Niosome is a non-ionic surfactant-based vesicle. Niosomes are formed mostly by non-ionic surfactant and cholesterol incorporation as an excipient which increases the drug permeation rate. To find the optimized formulation, preliminary evaluation and characterization studies were conducted. Various Niosome formulations were prepared by various methods, but the most commonly used method for preparing Niosomes is Film hydration method, which has the best entrapment efficiency, and various evaluation tests were performed for Niosomes. Niosome loaded Transdermal patch formulations were prepared by various methods, and then various evaluation tests were performed for Niosome loaded Transdermal patch formulations. In comparison to other transdermal formulations, transdermal patches limit medication loss and have the longest duration of effect. So, niosome loaded transdermal patches are made to relieve pain and edema, as well as oral medicine side effects, and they provide a precise amount of medication via the skin at a predefined rate to reach the blood circulation.

**Keywords:** edema, medication, hip joint, niosomes

