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Brief Report

Transdermal Patch: An Overview

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BRIEF REPORT

A transdermal patch is a medicated adhesive patch that is applied to the skin and used to deliver a particular amount of medication into the bloodstream through the skin. This frequently aids in the healing of a damaged bodily part. A transdermal drug delivery channel has an advantage over other types of medication distribution such as oral, topical, intravenous, intramuscular, and so on. Is that the patch delivers medication to the patient in a regulated manner, usually by a porous membrane covering a pharmaceutical reservoir or by body heat melting small layers of medication contained in the adhesive. The fundamental problem of transdermal delivery systems is that the skin is a very efficient barrier; as a result, this method can only deliver drugs with molecules tiny enough to permeate the skin. Transdermal patches are currently accessible in a wide range of medications. The US Food and Drug Administration approved the first commercially accessible prescription patch in December 1979. These patches contained scopolamine, which was used to treat motion sickness.

As a cosmetic, topical, and transdermal delivery technique, transdermal patches are increasingly frequently utilised. These patches are a crucial result of advances in skin science, technology, and expertise, which have been produced via trial and error, clinical observation, and evidence-based investigations dating back to the earliest human records. This overview starts with the earliest topical medicines and progresses through topical delivery to today's transdermal patches, outlining the early studies, devices, and drug delivery methods that underpin contemporary transdermal patches and their actives along the way. The evolution of various patches designs and their limits, as well as the requirements for actives to be employed for transdermal distribution, are then considered.

The qualities of existing marketed products, as well as difficulties related with their use, such as variability, safety, and regulatory factors, are then described. With an area of 1.5 to 2.0 m^2 in adults, the skin is the biggest organ in the human body by mass. Since man's earliest medical records, drugs have been applied to the skin to cure superficial illnesses, for the transdermal administration of therapies to manage systemic ailments, and as cosmetics. In ancient Egypt and Babylonian medicine, for example, the use of salves, ointments, potions, and even patches containing plant, animal, or mineral extracts was already common (around 3000 BC). However, when delivery technology was created to provide precise and repeatable administration through the skin for systemic effects in the later third of the twentieth century, transdermal delivery systems became regular practise. The purpose of this review is to go over the long history of topical and transdermal distribution, focusing on the evolution and contemporary use of transdermal patches.

Drug blood level–time profiles, which may be compared to or projected from p.o. or parenteral delivery, are usually used to establish the technology's prospective efficacy and suitability for systemic therapy. The amount of drug released into the body from the delivery mechanism and the application area determines the drug concentrations in the blood. Transdermal administration is also utilised to induce clinical effects deep within or beneath the epidermis, such as local anaesthetic and anti-inflammatory action. Topical delivery, on the other hand, aims to address superficial, but sometimes critical, skin issues with a localised effect. Topical therapies that were anointed, bandaged, rubbed, or applied to the skin are thought to have been utilised since the dawn of time, with written documents, such as the Sumerian clay tablets, revealing the techniques. Schwenkenbecker proposed in 1904 that the skin was permeable to lipid-soluble compounds but not to water and electrolytes.

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