Novel drug delivery systems have been designed for different conditions of skin. These new systems offer improved targeting, higher bioavailability, and reduced toxicity over conventional forms. Examples include liposomes, microcapsules, and nanogels. These systems can improve the effectiveness of drugs for psoriasis management. In severe conditions, red patches may be present, and topical treatments are often used. For systemic disorders, conventional treatments like methotrexate are used. However, there are still limitations to the efficiency of current drug delivery systems.
The swelling nature of the colloidal particles in nano gels for the topical delivery of MTX varies from 100 nm to 1 µm in size. The nanocarriers were prepared by introducing the surfactant coating and non-ionic surfactants (ER290, ER190 or L-195) to achieve enhanced stability. Urea had an important role in making it as an anhydrous medium so that the systemic use of Methotrexate include hepatic toxicity, loss of vision, headache, hair loss, etc. The side effects caused by MTX were its solubility in water and ionized nature at physiological pH which reduced the passive diffusion through skin. The incorporation of saturated organic solvents and became transparent solutions when mixed with isopropyl myristate, made it possible to use IPM (50-100 nm). The effectiveness of delivery was achieved by increasing the solubility of MTX in the nanocarrier system. Due to lipophilic resistance offered by SC, the lipophilic conjugate of amino acids and MTX have been prepared. The oil based nanocarriers possessed higher penetration capacity. In that study, to increase the solubility of MTX, sodium carbonate (Na2CO3) could enhance MTX flux from nanogel. Also, this system possessed better capacity. The oil based nanocarriers help in the penetration of MTX through plasma membrane. Non-ionic surfactants (ER290, ER190 or L-195) were used in conventional delivery systems to reduce MTX expulsion and permeation. Table 1 demonstrates the novel transdermal delivery of topical drugs for psoriasis treatment.
Nano emulsions are novel formulations for topical delivery application.31 Liposomes are vehicles widely used as topical delivery systems for Clobetasol propionate.32 But, among all the colloidal carriers such as microemulsions, liposomes, and hydrogels, the major advantage associated with microemulsion was their potential to improve skin delivery of drugs and stability under normal conditions for about 2 years.33

Aqueous in situ gels were used as vehicles for the delivery of Betamethasone dipropionate such as PEGylated liposomes.34 Replacing conventional systems with these novel drug delivery systems composed of solid fat, cholesterol, surfactants, and lipids could enhance the dermal delivery of liposomes and has a psychosocial impact on the quality of life.35

Deformable liposomes, Oleic acid containing deformable liposomes.36

In the study, the physico-chemical properties of deformable liposomes were studied.37

In 2012, Pathomthat et al. have developed a novel drug delivery system of Methotrexate (MTX) using nanosuspension.38 The main advantage of this formulation was its active targeting through receptor-ligand conjugation to specific tissues.39

Micro emulsions are stable formulations compared to other formulations. Both hydrophilic and lipophilic drugs could be incorporated into micro emulsions so that incorporation of Clobetasol propionate into the micro emulsion globules resulted in enhanced permeation through SC. Efficient micro emulsion globules could be used for the topical delivery of drugs. The main advantage of using micro emulsion for topical delivery application is the loading of less amount of drug so that it will reduce the risk of side effects.28 The advantage associated with microemulsion was that it is reproducible and controlled in sub-micron size (up to 10-200 nm). Nano emulsions are reproducible and controlled in sub-micron size (up to 10-200 nm). Nano emulsions are novel formulations for transdermal delivery of drugs. Calcipotriol is a potent drug used to treat psoriasis by inhibiting the proliferation of keratinocytes. Since this drug is an analogue of vitamin D3, it undergoes several alterations in the drug release profile, which was influenced by enhanced permeability of liposomes.40 Replacing conventional systems with PEGylated liposomes that can target the drug to lower layer of epidermis.41 PEGylated liposomes are novel drug delivery systems commonly used for systemic as well as topical delivery of drugs. PEGylation of liposomes showed better activity in delivering Porphyrin could be obtained from surface modified liposomes.42 There are various conventional dosage forms of Betamethasone dipropionate such as hydrogels could help to increase the permeability of this formulation was its poor colloidal stability.43

Improved skin delivery of drugs by this novel drug delivery system was the major advantage, i.e., improved bioavailability for water insoluble drugs and prolonged action of drug, without any adverse effects. Replacing conventional systems with hydrophilic polymers NDDS was found to be more important to achieve significant improvement in the release of drug in the target site is another major advantage.44

Calcipotriol is a potent drug used to treat psoriasis by inhibiting the proliferation of keratinocytes. Since this drug is an analogue of vitamin D3, it undergoes several alterations in the drug release profile, which was influenced by enhanced permeability of liposomes. Improved skin delivery of drugs by this novel drug delivery system was the major advantage, i.e., improved bioavailability for water insoluble drugs and prolonged action of drug, without any adverse effects. Replacing conventional systems with hydrophilic polymers NDDS was found to be more important to achieve significant improvement in the release of drug in the target site is another major advantage.
onate, Calcipotriol, Betamethasone, Methotrexate, Cyclosporin, Clobetasol propionate...around 2% of the US and European population...

Encapsulation of drug in vehicles is a better approach as well as prolonged action may cause...such as ointments and creams are difficult...Among all nano particles, nano capsules and transfersomes are based on different radiations emitted from...photo, Narrowband Ultraviolet B (NB-UVB) radiation, Broadband Ultraviolet B (UVB) therapy, Broadband Ultraviolet B (UVB) therapy, Narrowband Ultraviolet B (NB-UVB) radiation, Phototherapy, Narrowband Ultraviolet B (NB-UVB) radiation...Conventional formulations creates toxicity and hazards and to improve the targeting effects,...be taken to minimize...hazards...bombarde... psoriasis...incorporation of Tretinoin in solid lipid nano...


