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# FORMULATION AND CHARACTERIZATION OF DRUG IN ADHESIVE TRANSDERMAL PATCHES OF BUFLOMEDIL HYDROCHLORIDE

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**Keywords:**

Pressure sensitive adhesive, penetration enhancers, solvent evaporation technique, transdermal patch.

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**ABSTRACT:** The purpose of this research was to develop a drug-in-adhesive type transdermal drug delivery system containing drug, buflomedil hydrochloride, pressure sensitive adhesive (PSA), Duro-Tak 387-2052 by the solvent evaporation technique. Different concentrations of penetration enhancers: oleic acid and isopropyl myristate (IPM) were used to enhance the transdermal permeation of buflomedil hydrochloride. 3M Scotchpak TM 9723 polyester film was used as a backing membrane and 3M Scotchpak TM 1022 - Fluoropolymer Coated Polyester film was used as a release liner for the preparation of transdermal patches. FTIR and DSC studies were done to know any possible interaction between drug and polymer. Prepared drug-in-adhesive transdermal patches were physically evaluated with regards to thickness, weight variation, surface pH, folding endurance, moisture content and moisture uptake. The adhesion properties of the patches were very satisfactory. Also, the prepared patches showed good uniformity with regard to drug content. In vitro drug permeation studies of formulations were performed by using Franz diffusion cell through dialysis membrane. It was observed that the formulation containing 95% adhesive solution and 10% IPM as permeation enhancer showed best in vitro drug permeation through dialysis membrane as compared to all other formulations. The results rate was found to follow zero order kinetics. These results indicate that the formulation F5 has shown optimum release in concentration independent manner. The mechanism of drug release from the PSA transdermal patches followed non-Fickian release mechanism.

**INTRODUCTION:** Transdermal drug delivery system has been in existence for a long time. In the past, the most commonly applied systems were topically applied creams and ointments for dermatological disorders. The occurrence of systemic side-effects with some of these formulations is indicative of absorption through the skin. A number of drugs have been applied to the skin for systemic treatment. In a broad sense, the term transdermal delivery system includes all topically administered drug formulations intended to deliver the active ingredient into the general circulation.

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Transdermal therapeutic systems have been designed to provide controlled continuous delivery of drugs via the skin to the systemic circulation. Moreover, it overcomes various side effects like painful delivery of the drugs and the first pass metabolism of the drug occurred by other means of drug delivery systems. So, this transdermal drug delivery system has been great fields of interest in the recent times. Many drugs which can be injected directly into the blood stream via skin have been formulated.

The main advantages of this system are that there is controlled release of the drug and the medication is painless. The drug is mainly delivered to the skin with the help of a transdermal patch which adheres to the skin. A transdermal patch has several components including liners, adherents, drug reservoirs, drug release membrane which play a vital role in the release of the drug. A pressure sensitive adhesive (PSA) maintains an intimate