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Research Paper

Higuchi Model Release Kinetics Of Transdermal Patches Of Flufeamic Acid

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ABSTRACT: *Drug delivery system may be a controlled release drug delivery system where there is predictive control over the release pattern, and subsequent tissue or blood levels can be achieved.It seems that the controlled delivery should be the goal for all products and now a days drug firms have been allocating large resources on the reformulation of older, existing drugs, in sustained and controlled drug delivery often resulting in special economicgains.[3] A transdermal patch is medicated adhesive patch that is placed on the skin to deliver a specific dose of medication through the skin and into the bloodstream. In this system the drug therapy can be stopped instantly in situation where drug input is no longer desirable. The system allows reduce frequency of dosing which is particular favorable Conventional systems of medication that require multi dose therapy are having many problems.*

KEYWORDS*: Transdermal,Drug Delivery, Conventional systems, adhesive, reformulation.*

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I. INTRODUCTION:

Several transdermal drug delivery systems (TDDS) have recently been development with the aim of accomplishing the objective of systemic medication through the transdermally controlled delivery of pharmaceuticals. The potential of TDDS was first demonstrated by the successful development of a scopolamine releasing TDD system in 1981Historically, the medicated plasters could be viewed as the first application of the idea of Transdermal drug delivery, bringing medication into close contact with the skin, through which drug is delivered transdermally. The transdermal route has become one of the most successful and innovative drug delivery system for research in pharmaceutical sciences. Transdermal drug delivery provides a leading edge over injectables and oral routes by increasing patient compliance and avoiding first pass metabolism respectively. A transdermal patch is medicated adhesive patch that is placed on the skin to deliver a specific dose of medication through the skin and into the bloodstream. In this system the drug therapy can be stopped instantly in situation where drug input is no longer desirable. The system allows reduce frequency of dosing which is particular favorable Conventional systems of medication that require multi dose therapy are having many problems. The controlled drug delivery is a newer approach is to deliver drug in to systemic circulation at a predetermined rate. Our system should duplicate continuous intravenous infusion, which not only by passes hepatic 'first pass' elimination but also maintains a constant, prolonged and therapeutically effective drug level in the body.

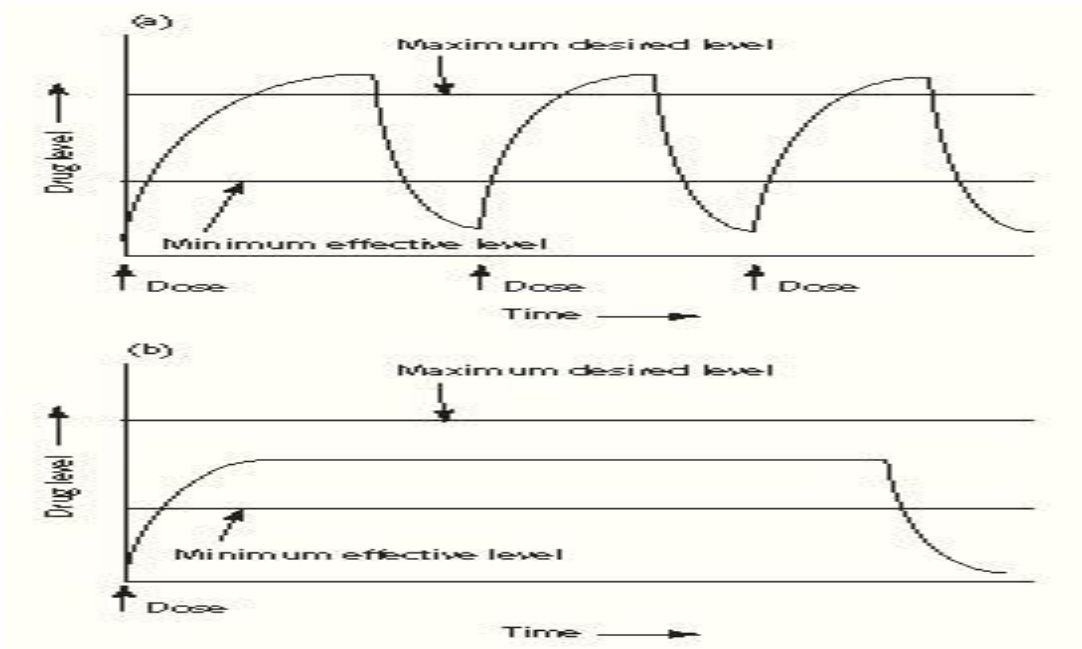

Figure 1: Controlled drug delivery system

II. MATERIALS AND METHODS:

IN VITRO DRUG RELEASE STUDIES OF FLUFENAMIC ACID PATCHES:

The release studies from formulated patches were carried out by using Franz diffusion cell. Prepared patch was placed between the donor compartments of diffusion cell separated by dialysis membrane. The receptor region comprising of buffer containing magnetic bead, which is operated by magnetic stirrer, for stirring. Periodically l ml of aliquot sample was taken out from the receptor compartment at graded time intervals and same is replaced with phosphate buffer pH 7.4, analysis was done using UV/Visible spectrophotometer at 288 nm against buffer as a reference.

The drug release data of all formulations were fitted to various mathematical models such as Higuchi's model as cumulative % drug released vs. square root of time. To determine the mechanism of drug release from formulations, the data were fitted into Korsmeyer Peppas equation as log cumulative % of drug released vs. log time

III. RESULTS AND DISCUSSIONS:

RELEASE KINETIC OF FLUFENAMIC ACID TRANSDERMAL PATCHES:

Higuchi model release kinetics of Formulations

Higuchi model release kinetics was shown by plotting a graph between cumulative percentage of drug remaining vs. square root of time;

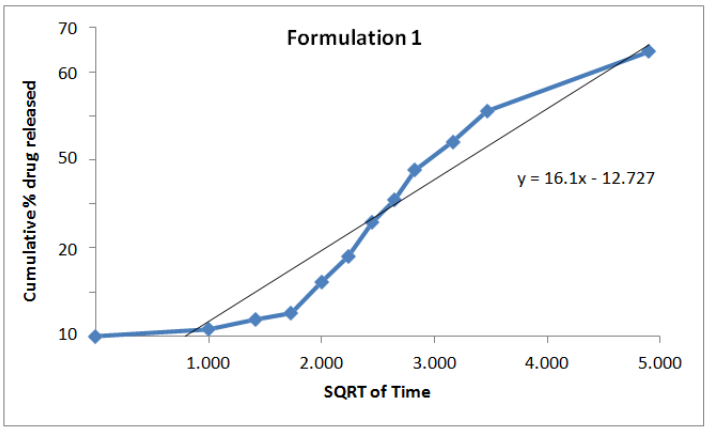

Figure 2: Higuchi model release kinetics of Formulation F1

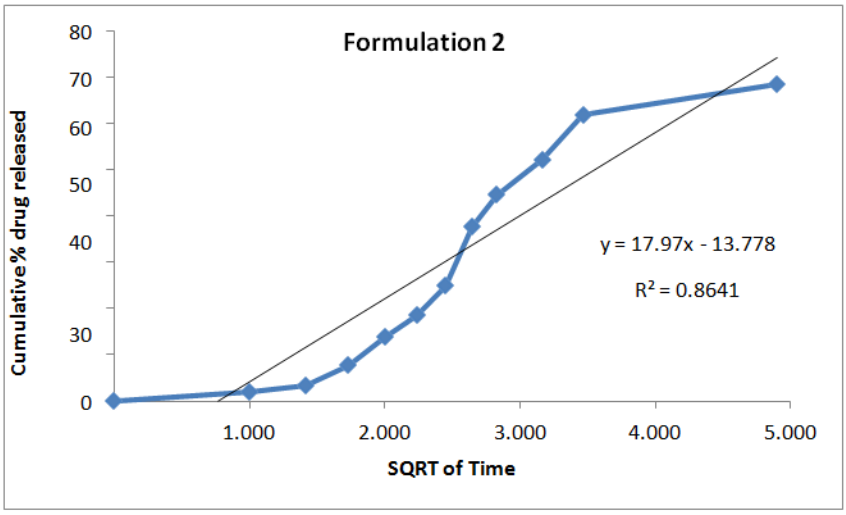

Figure 3: Higuchi model release kinetics of Formulation F2

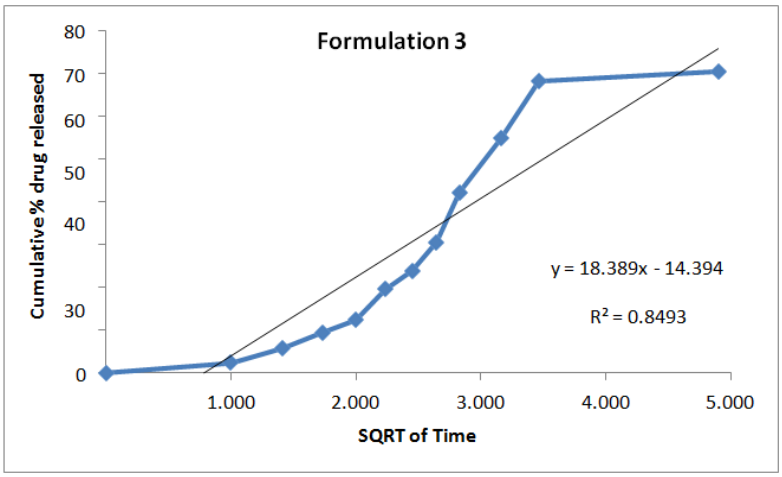

Figure 4: Higuchi model release kinetics of Formulation F3

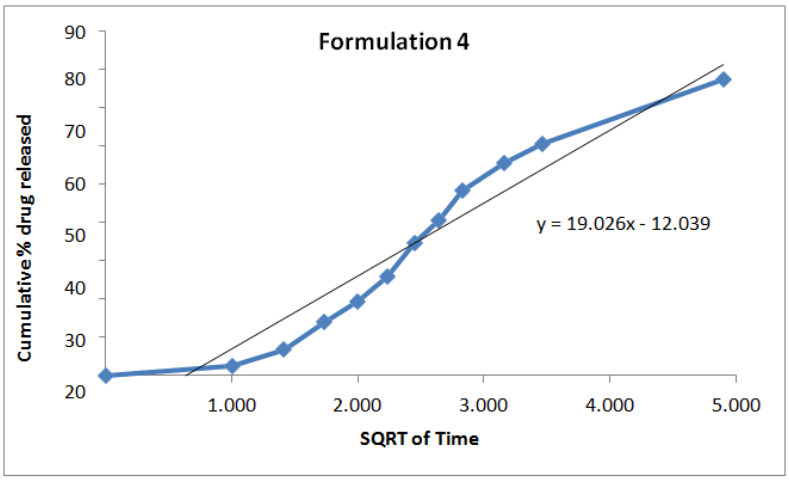

Figure5: Higuchi model release kinetics of Formulation F4

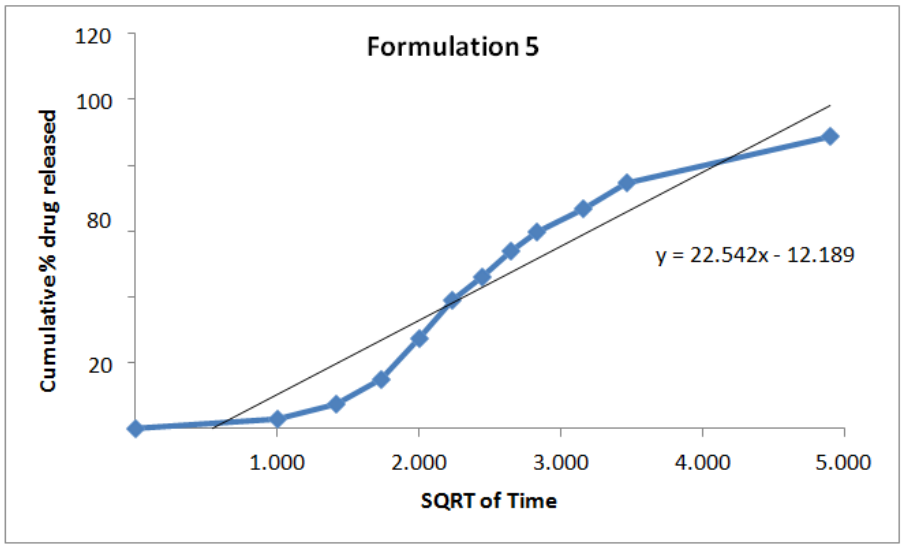

Figure 6: Higuchi model release kinetics of Formulation F5

Table 1: Higuchi model release kinetics of Flufenamic acid patches

S. No.	Formulation Code	Higuchi model Regression value (R^2)
1.	F1	0.898
2.	F2	0.864
3.	F3	0.849
4.	F4	0.925
5.	F5	0.910

The R^2 values of Higuchi model plot was found between 0.849 and 0.925.

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