

## A REVIEW: THE NOVEL DRUG DELIVERY BY TRANSDERMAL PATCHES

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### ABSTRACT

Now a day about 74% of drugs are taken orally and which are not as effective as desired. To overcome such problems transdermal drug delivery system (TDDS) was developed. Delivery of a drug through the skin to achieve a systemic effect of a drug is commonly known as transdermal drug delivery and differs from conventional topical drug delivery. Transdermal drug delivery system (TDDS) are dosage forms involves drug transport to viable epidermal and/or dermal tissues of the skin for local therapeutic effect while a very major fraction of a drug is transported into the systemic blood circulation. The adhesive of the transdermal drug delivery system (TDDS) is critical to the safety, efficacy and quality of the product. Topical administration of therapeutic agents offers many advantages over conventional oral and invasive methods of drug delivery. Many important advantages of transdermal drug delivery (TDDS) are limitation of hepatic first pass metabolism, enhancement of therapeutic efficiency and the maintenance of steady plasma level of the drug. Thus, this article provides an overview of types of transdermal patches, methods of preparation and its physicochemical methods of evaluation.

**KEYWORDS:** Transdermal drug delivery system (TDDS), Topical drug delivery, Systemic blood circulation.

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### INTRODUCTION

Pharmacology is the backbone of medicine. However, as a volatile subject it is difficult for the students in reading & recollecting the contents. The Medical Council of India gives guidelines which emphasize on method of assessment of knowledge and skills in Pharmacology [1]. Based on the first examination held by Oxford University in 1958, the examinations would encourage the students to study and improve their knowledge [2]. In view of medical education, it is necessary to assess the performance of medical students [3,5]. The objective of this study was to compare and assess the performance of medical students in different systems of Pharmacology based on their marks obtained in written tests.

### MATERIALS AND METHODS:

This Retrospective, Comparative, Analytical study was conducted in Department of Pharmacology, Government Kilpauk Medical College, Chennai after getting approval from the Institutional Ethics Committee. Confidentiality of individual student's score was maintained.

Percentage of marks obtained in the written tests by II<sup>nd</sup> MBBS students in the Department of Pharmacology, KMC belonging to various batches from the period of

2002 – 2009 were included. The Systems analyzed were General pharmacology (GP), Autonomic nervous system (ANS), Cardio vascular system (CVS), Central nervous system (CNS), Endocrinology and Chemotherapy. The marks obtained by the students were analyzed in following headings

- No of students scoring >70% of marks,
- No of students scoring 50 – 70% of marks
- No of failures (<50% of marks)
- No of absentees in each system in each batch and between the batches.

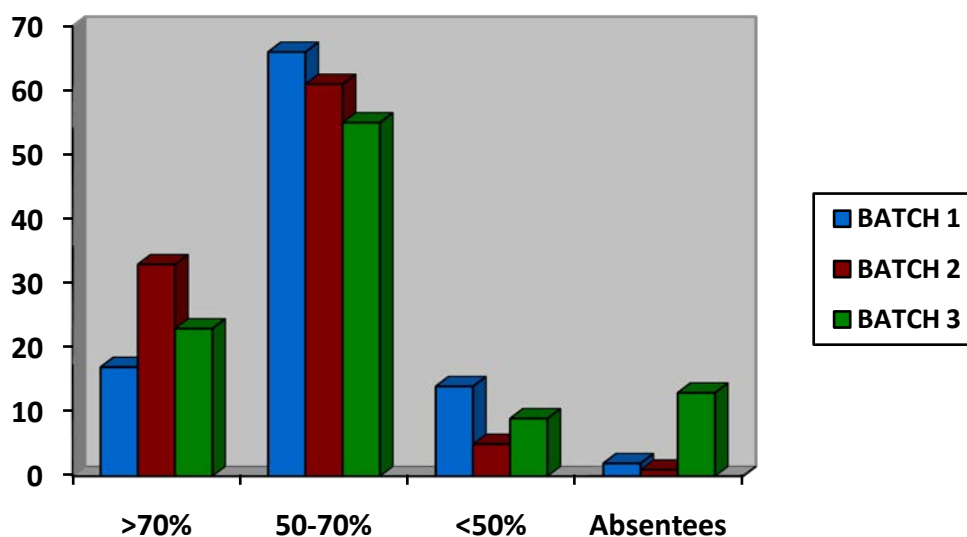
### RESULTS:

On comparing six systems, 24% of students in GP, 17% students in ANS and CNS, 13% of students in CVS, 29% in Endocrinology and 31% of students scored highest mark percentage (>70%). 61% of students in GP, 50% of students in ANS and CNS, 47% of students in Endocrinology, 42% in Chemotherapy got 50-70% marks. Failure rate of <50% of marks were scored by 9% of students in GP, 32% of students in ANS, 31% in CNS, 18% of students in Endocrinology, 24% of students in Chemotherapy. There was not much difference in absentees.

**TABLES AND FIGURES:**

**TABLE1: GENERAL PHARMACOLOGY**

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
>70	17	33	23
50-70	66	61	55
<50	14	05	09
Absentees	02	01	13



**FIGURE 1: GENERAL PHARMACOLOGY**

**TABLE 2: AUTONOMIC NERVOUS SYSTEM**

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
>70	10	10	30
50-70	58	46	47
<50	32	43	20
Absentees	01	01	03

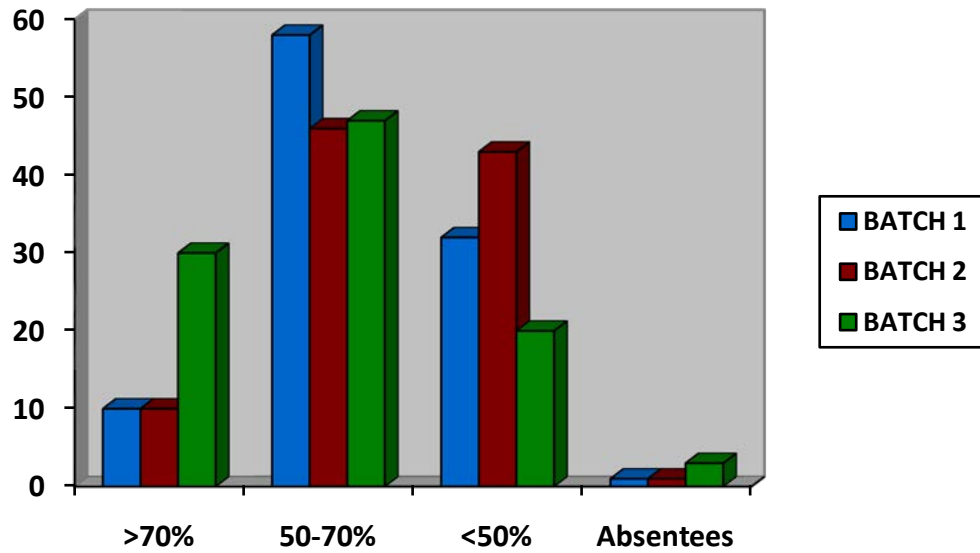


FIGURE 2: AUTONOMIC NERVOUS SYSTEM  
TABLE 3: CARDIOVASCULAR SYSTEM

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
>70	01	22	15
50-70	42	51	42
<50	52	28	34
Absentees	05	00	05

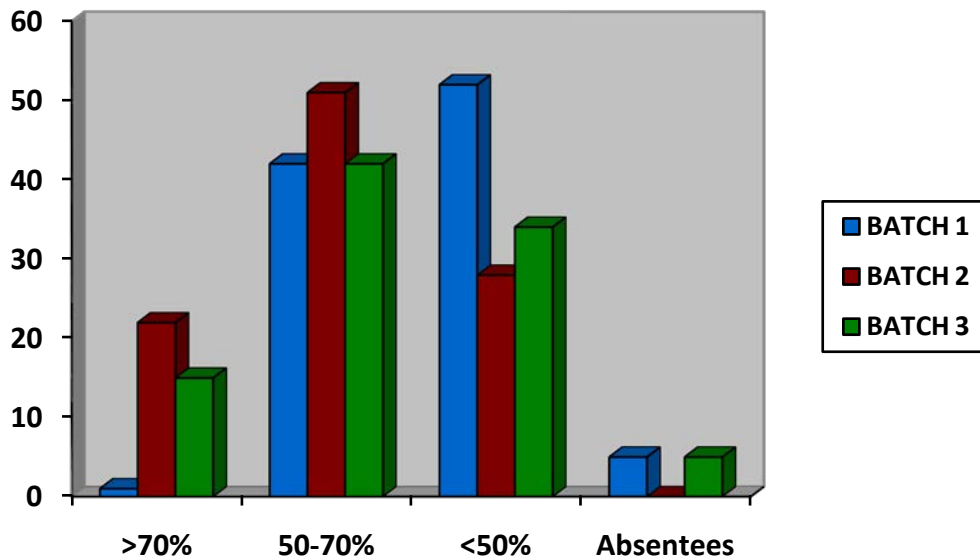


FIGURE 3: CARDIOVASCULAR SYSTEM

TABLE 4: CENTRAL NERVOUS SYSTEM

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
>70	01	26	24
50-70	57	48	45
<50	40	22	31
Absentees	02	05	00

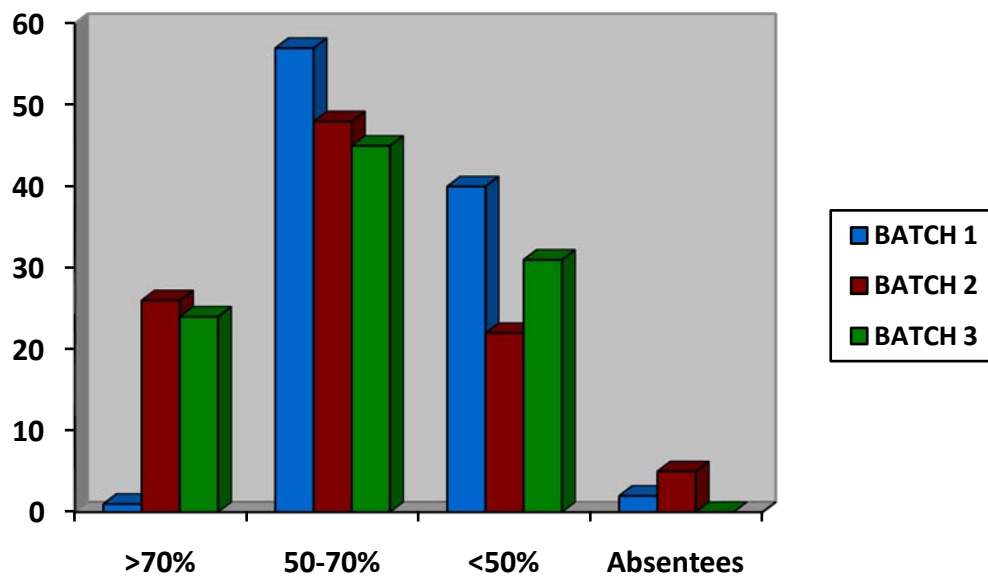


FIGURE 4: CENTRAL NERVOUS SYSTEM  
TABLE 5: ENDOCRINOLOGY

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
>70	42	13	33
50-70	46	54	40
<50	07	31	15
Absentees	05	03	12

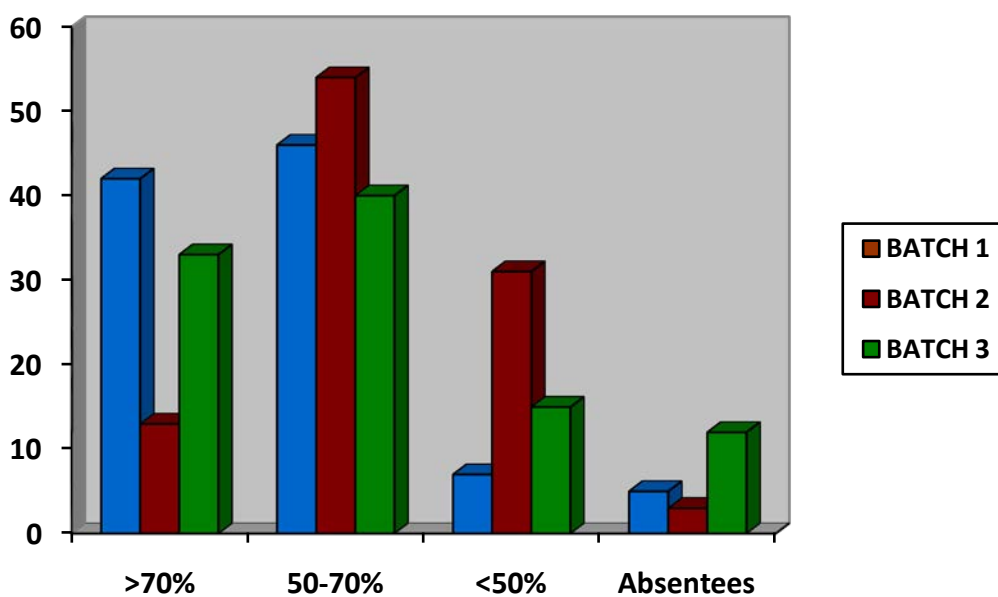


FIGURE 5: ENDOCRINOLOGY

TABLE 6: CHEMOTHERAPY

MARKS%	BATCH-1%	BATCH-2%	BATCH -3%
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>70	38	34	21
50-70	43	50	32
<50	16	13	44
Absentees	02	04	03

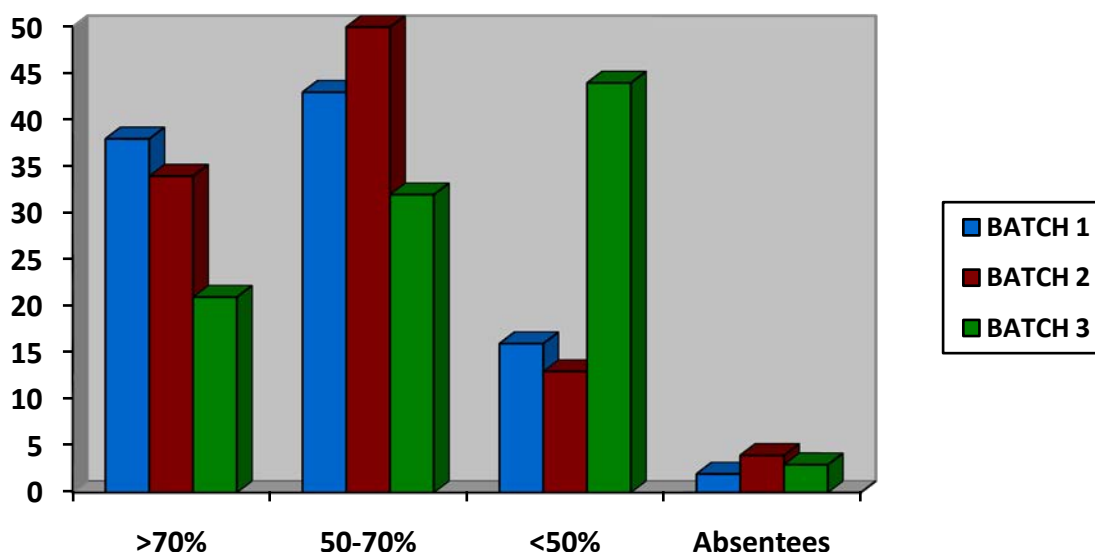


FIGURE 6: CHEMOTHERAPY

**DISCUSSION:**

The written examination is a useful evaluation format that not only tests students’ ability to recall facts, but also can assess higher-order cognitive functions, such as interpretation of data and problem solving skills [4]. The marks obtained by 263 students belonging to 3 batches were analysed in this study. The Highest mark percentage (>70%) was achieved by maximum of 31% of the students in Chemotherapy and minimum of 13% of students in CVS. 61% of students scored average 50-70% marks in GP and there was not much difference in other systems. Considering the failure rate, maximum of 38% in CVS, 32% in ANS, 31% in CNS and minimum of 9% in GP were observed. The failure rates give a view that the students show more interest in studies in the beginning and at the end, as their exams approach. From the above study, we conclude that the performance of students was not satisfactory in cardiovascular system, Autonomic and Central nervous system. So effective teaching learning sessions can be

implemented for these systems, and at the mid-session of the 18 month period of stay in pharmacology, which will enable the students to develop interest and achieve higher percentage of marks.

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