



Journal of Pharmaceutical and Biological Research

Journal Home Page: www.pharmaresearchlibrary.com/jpbr



Review Article

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Past work done on Matrix Tablets: Journal based review

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ABSTRACT

A wide range of drugs have been studied in the form of matrix tablets. Many polymers were tried in single, combination of two and more for sustaining the drug release from matrix type of dosage forms. An attempt has been made in gathering the information regarding which are the drugs and polymers have been tried in recent years. More than 100 articles published in journals were studied and the polymer combinations used were represented as pie diagrams. The study concludes that more than 64 % matrix tablets were prepared by using HPMC. The second polymer tried and succeeded was Eudragit. HPMC+PVP and xanthan gum + Guar gum combinations were tried. On the other hand HPMC, Eudragit, Xanthan gum and Guar gum combinations were used much in multiple polymer combinations.

Keywords: Matrix Tablets, HPMC, Eudragit, Xanthan gum, Guar gum

ARTICLE INFO

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Article History: Received 15 March 2015, Accepted 24 April 2015, Available Online 21 June 2015

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Manuscript ID: JPBR2550



PAPER-QR CODE

Citation: Hindustan Abdul Ahad, et al. Past work done on Matrix Tablets: Journal based review. *J. Pharm. Bio. Res.*, 2015, 3(1): 254-256.

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1. Introduction

Oral drug delivery is the most widely utilized route of administration among all the routes. Oral route is considered most natural, uncomplicated, convenient and safe due to its ease of administration, patient acceptance and

cost-effective manufacturing process [1]. Pharmaceutical products designed for oral delivery are mainly immediate release type or conventional drug delivery systems, which are designed for immediate release of drug for rapid

absorption.[2]. Controlled drug delivery systems have been developed which are capable of controlling the rate of drug delivery, sustaining the duration of therapeutic activity and/or targeting the delivery of drug to a tissue. [3,4]. A wide range of drugs have been studied in the form of matrix tablets. Many polymers were tried in single, combination of two and more for preparing matrix tablets. Here an attempt has been made to explore the most widely used polymers in preparing matrix tablets by referring online journals from.

2. Materials and Methods

In this study past work done on matrix tablets were collected by referred reviewed research journals of Pharmaceutics during the year 1987 to 2015. The objective of this work is which are the polymers tried to formulate matrix tablets. It is necessary to fix time period for our study for research and for this period of research the figures relating to the period will be collected. In our study the figures for the year 1987 to 2015. The objective of this work is which are the polymers tried to formulate matrix tablets.

Methods

Drugs studied in sustained release tablet formulations

Many drugs of all category ranges were studied. All categories of drugs viz., analgesics, antibiotics, cardiac drugs, anti-asthmatics etc., were studied by matrix technology using various polymers (single and in combination) [4-7].

Single polymers

Past work done by using single polymers viz., Hydroxy propyl methyl cellulose, Eudragit, Mannitol, Chitosan, Carboxy Vinyl Polymer, Xanthan gum, Guar gum, Methyl Methacrylate and Cellulose were studied [8-12].

Combination of two polymers.

Past work done by using a combination of two polymers viz., HPMC+PVP, HPMC+Polyethylene oxide, HPMC+Eudragit, HPMC+Ethyl cellulose, HPMC+ Karaya gum, HPMC+Procera gum, HPMC+NaCMC, Eudragit+Ethocel, Guar gum+Endosperm, Guar gum+Pectin, Xanthan gum+Sodium alginate, Xanthan gum+Konjacglucomannan, Xanthan gum+Locust bean gum, Karayagum+ghatti gum, Chitosan+Polycarbophil were studied [13-18].

Combination of three polymers

Past work done by using a combination of three polymers viz., HPMC+ Methocel +polyethyleneOxide, HPMC+Eudragit+ Carbopol, HPMC+ Eudragit+Hpc, HPMC+Cashew nut tree gum+Carbopol, HPMC+Eudragit+Sodium methyl cellulose, HPMC+ Xanthangum +Carbopol, HPMC+ Karayagum+ Carrageenan gum, Xanthan gum+ Karayagum+ Guargum, Xanthan gum+Guargum+Joel Gum, Xanthangum+ Guargum+ Glycerylbehenate, Kollidon+Eudragit+ Ethylcellulose, Hyaluronatesodium+pectin+Alginatesodium, Tamarindxylo glucan +Gellangum+Sodiumcarboxy methyl cellulose, were studied [19-21].

Combination of Four and above polymer combination

Past work done by using a combination of four polymers viz.,HPMC+ Xanthangum+ Eudragit+ Chitosan+ Ethyl Cellulose+ Precirol, HPMC+ Xanthangum+ Eudragit+ Guargum+NaCMC, Xanthangum+Guargum+ Rosingum+ Journal of Pharmaceutical and Biological Research

Pectin+Sodiumalginate, Xanthangum+ Eudragit+ Chitosan + Sodiumalginate+ Carrageenan+ Caroxy methyl cellulose sodium+Carbomer, Ethylene vinyl acetate+ Colophony+ Olibanumresin+Ethyl cellulose were studied [22].

3. Results and Discussion

- Pie diagram of single polymers used in preparing matrix tablets was shown in fig. 3.1
- Pie diagram of combination of two polymers used in preparing matrix tablets was shown in fig. 3.2
- Pie diagram of combination of three polymers used in preparing matrix tablets was shown in fig. 3.3.
- Pie diagram of combination of four and above polymers used in preparing matrix tablets was shown in fig. 3.4.



Figure 3.1: Pie diagram showing single polymers used in preparing matrix tablets

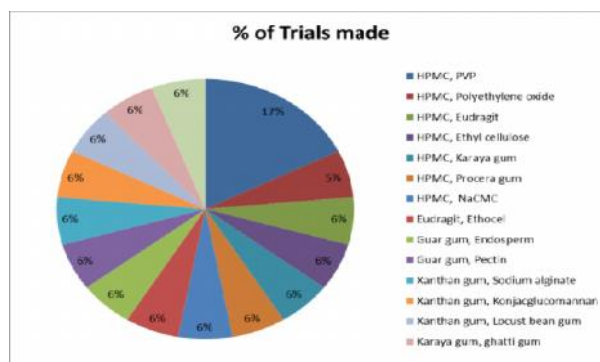


Figure 3.2: Pie diagram showing combination of two polymers used in preparing matrix tablets

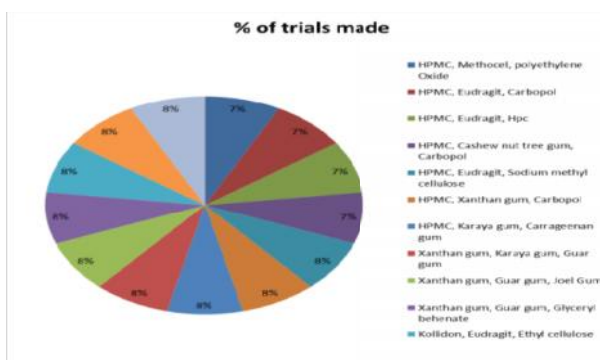


Figure 3.3: Pie diagram showing combination of three polymers used in preparing matrix tablets

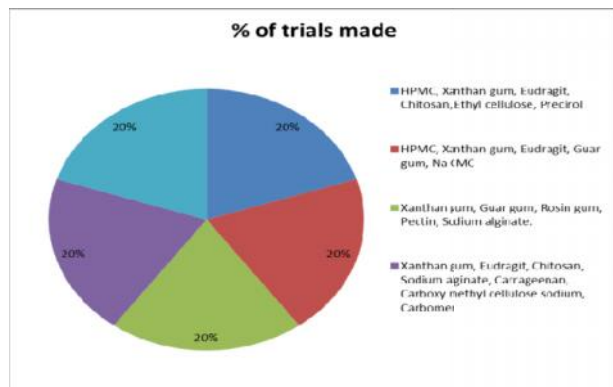


Figure 3.4: Pie diagram showing combination of four and above polymers used in preparing matrix tablets

4. Conclusion

A wide category of drugs viz., analgesics, antibiotics, cardiac drugs, anti-asthmatics etc., were studied by matrix technology using various polymers (single and in combination). Primarily HPMC and secondary Eudragit were tried by many researchers for preparing matrix tablets under single polymer category. On the other hand the combination of HPMC+PVP and Xanthan gum + Guar gum combinations were used by the researchers in preparing matrix tablets of two polymers category. HPMC, Eudragit, Xanthan gum and Guar gum combinations were used much in combination of three polymers category. Finally HPMC, Eudragit, Xanthan gum, Guar gum and CMC combinations were used much in multiple polymer combination of four and above polymers.

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