



Libyan International Medical University
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Second year



Modified Release Dosage Form

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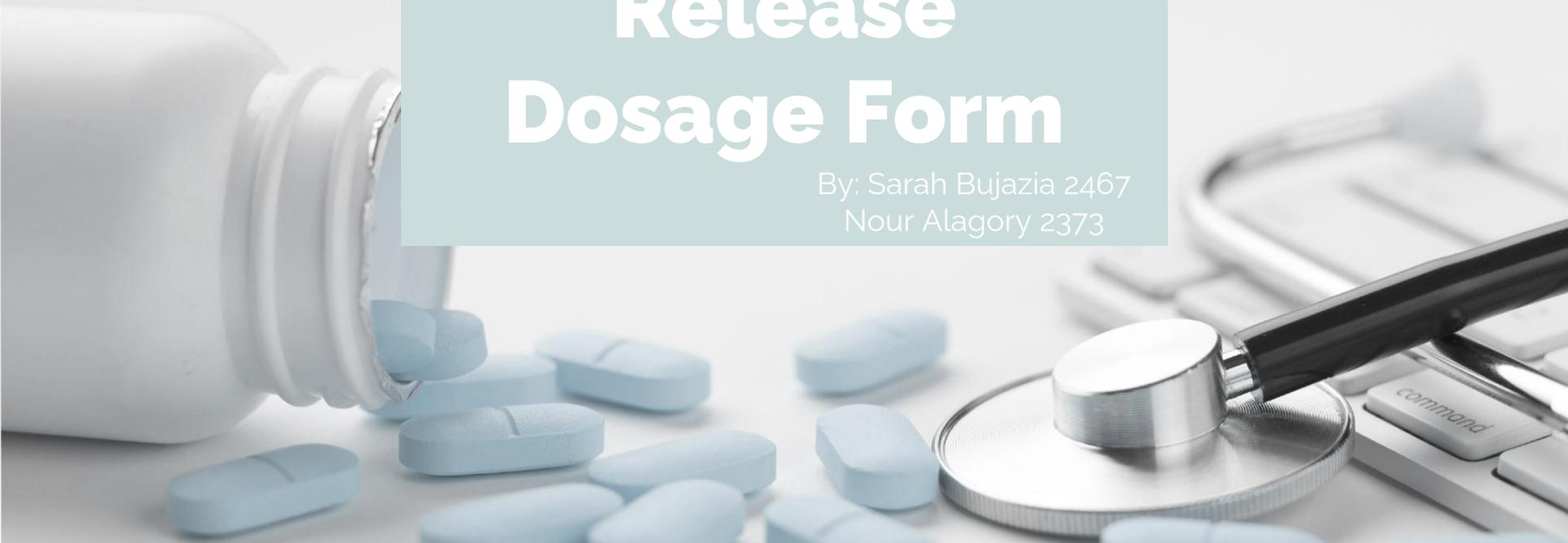
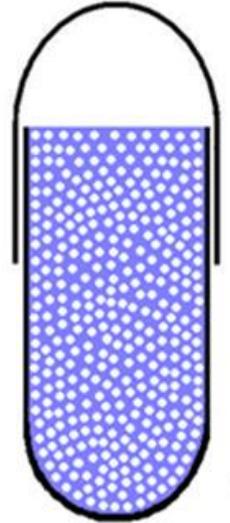


TABLE OF CONTENTS

- 01 Introduction**
- 02 List the types of modified release dosage form**
- 03 List the advantages and disadvantages of modified release dosage form**
- 04 Summary**
- 05 References**

INTRODUCTION

Modified-release dosage forms have been developed to deliver drug to the part of the body where it will be absorbed, to simplify dosing schedules, and to assure that concentration of drug is maintained over an appropriate time interval. Drugs that are not inherently long lasting require multiple daily dosing to achieve the desired therapeutic effects.



Types of modified release dosage forms



**Repeat- action
release**



Delayed release



Sustained release



Target release



Controlled release



Extended release

Delayed release dosage form

Pharmaceutical preparation that releases the drug(s) at a time other than promptly after administration and discrete portions of the drug other than promptly after administration. Typically, this is related to enteric coated tablets.

The delay may be time based or based on the influence of environmental conditions, like gastrointestinal pH.



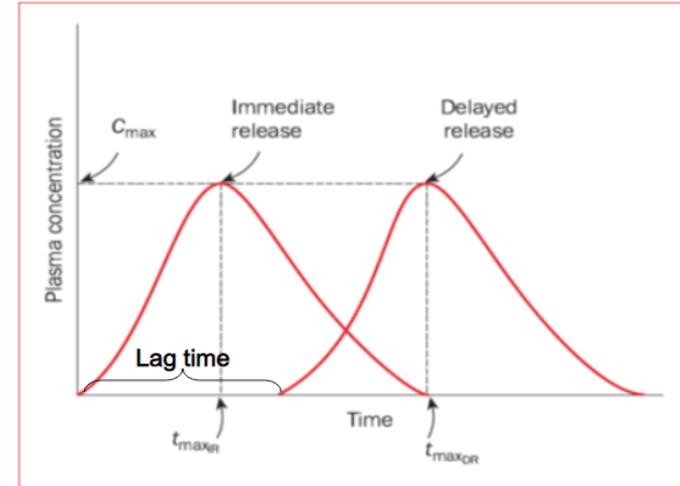
Advantage

- protect the drug from degradation in the low pH environment of the stomach
- To protect the stomach from irritation by the drug.
- To promote absorption,



Disadvantage

- May cause gastric irritation



Extended release dosage form

These products are formulated to make the drug available over an extended period after administration. This allows a reduction in dosing frequency compared to a drug presented as a conventional dosage form (e.g. as a solution or an immediate-release dosage form).



Advantage

- Reduction in drug blood level fluctuations so sustained blood levels
- Enhanced reduction in dosing
- Enhanced patient compliance
- Reduction in adverse side effects



Disadvantage

- Extended-release products contain a higher drug load and thus any loss of integrity of the release characteristics of the dosage form has potential problems.

Sustained release dosage form

These systems maintain the rate of drug release over a sustained period for example, if the release of the drug from the dosage form is sustained such that the release takes place throughout the entire gastrointestinal tract, one could reduce C_{max} and prolong the time interval of drug concentration in the therapeutic range.

Sustained-release dosage forms achieve this mostly using suitable polymers, which are used either to coat granules or tablets (reservoir systems) or to form a matrix in which the drug is dissolved or dispersed (matrix systems).



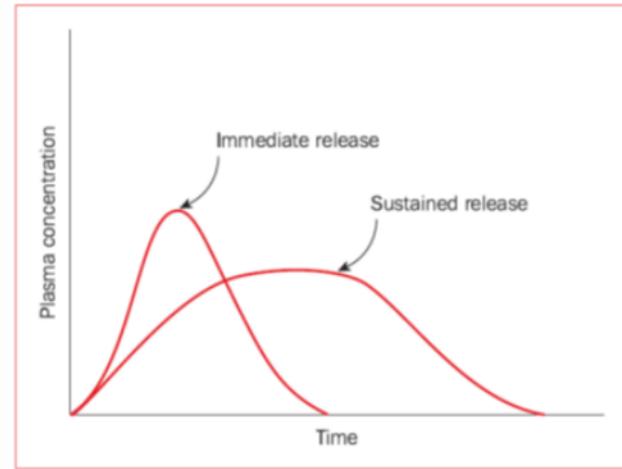
Advantage

- The ability to keep stable amounts of the medication in the bloodstream.
- They don't have to be taken as frequent as instant-release drugs



Disadvantage

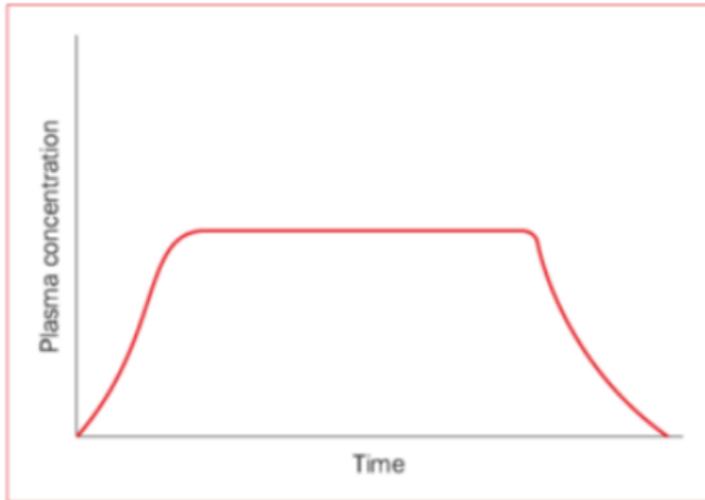
- Possibility of dose dumping
- Risk of increase drug concentration in plasma which could lead to toxicity



Controlled release dosage form

It is a system that delivers an agent (active pharmaceutical ingredient) at a controlled rate for an extended time that might localize drug action by spatial placement near where it is needed and target drug action by using techniques to deliver drug to a particular cell type.

Controlled release dosage forms enhance the safety, efficacy, reliability, and convenience of drug therapy by controlling the rate and duration of drug release to control drug actions and to reduce the frequency of drug administration, thus encouraging patient compliance.



Advantage

- Less frequent administration
- Better patient compliance
- Increased convenience
- Reduced side effects



Disadvantage

- Cost of formulation
- Fate of controlled release system if not biodegradable
- Biocompatibility
- Fate of polymer additives.

Target release dosage form

Method of delivering medication to a patient in a manner that increases the concentration of the medication in some parts of the body relative to others. The goal of a targeted drug delivery system is to prolong, localize, target and have a protected drug interaction with the diseased tissue. It is the dosage form that releases drug at /near the intended physiological site of action. Targeted release dosage forms may have extended or immediate release characteristics.



Advantage

- It is possible to enhance the activity and specificity of the drug and to reduce its toxicity and side-effects



Disadvantage

- The high cost, which makes productivity more difficult and the reduced ability to adjust the dosages.

Repeat action release

Forms that usually containing two single doses of medication one for immediate release and the second for delayed release usually used for chronic conditions. Typically, the immediately released drug comes from the exterior portion of the tablet, with the delayed release coming from the interior portion. Essentially, there is a tablet within a tablet, with the interior tablet having a coating that delays release of its contents for a predetermined time



Advantage

- To protect the active substance from the acid environment of the stomach,
- Or to protect the stomach from the active substance.



Disadvantage

- Risk of Dose Dumping (failed delivery device) a large immediate dose
- Inflexible dosing schedule

Summary

In summary, there are six types of modified dosage form:

1. The delayed
2. The extended which is split into controlled and sustained
3. Target specific release dosage form
4. Repeat action release

As well as the advantage a disadvantage of each one of these types.

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thank you!