FLOATING DRUG DELIVERY SYSTEM

Dr. S.VIDYADHARA

Professor & Principal

CHEBROLU HANUMAIAH

INSTITUTE OF PHARMACEUTICAL SCIENCES

CHANDRAMOULIPURAM,CHOWDAVARAM,

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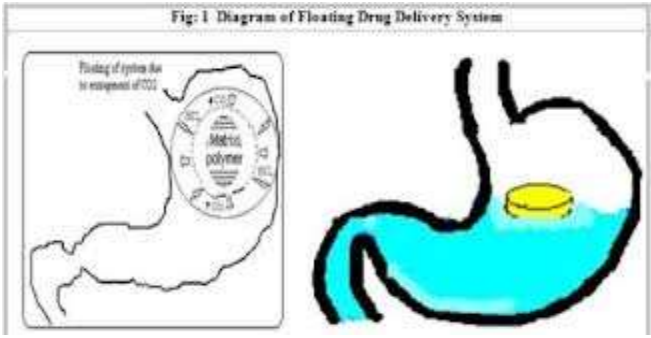
INTRODUCTION

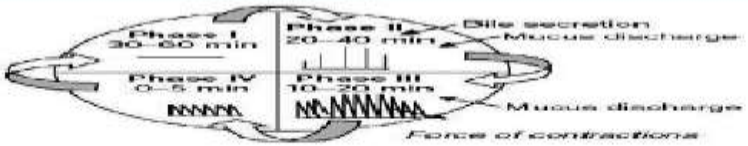
- Floating drugs are gastro retentive systems which remain in gastro region for several hrs i.e it prolong gastro residual time of drugs
- FDDS enhance GRT&Control fluctuation in plasma drug concentration
- **NEED OF FDDS**
- Gastric emptying time in humans avg(2-3 hrs) through major absorption zone can result incomplete drug release from drug delivery leads to reduce in administered dose efficacy
- Beneficial in gastro intestinal diseases
- Lower dosing&lesser side effects

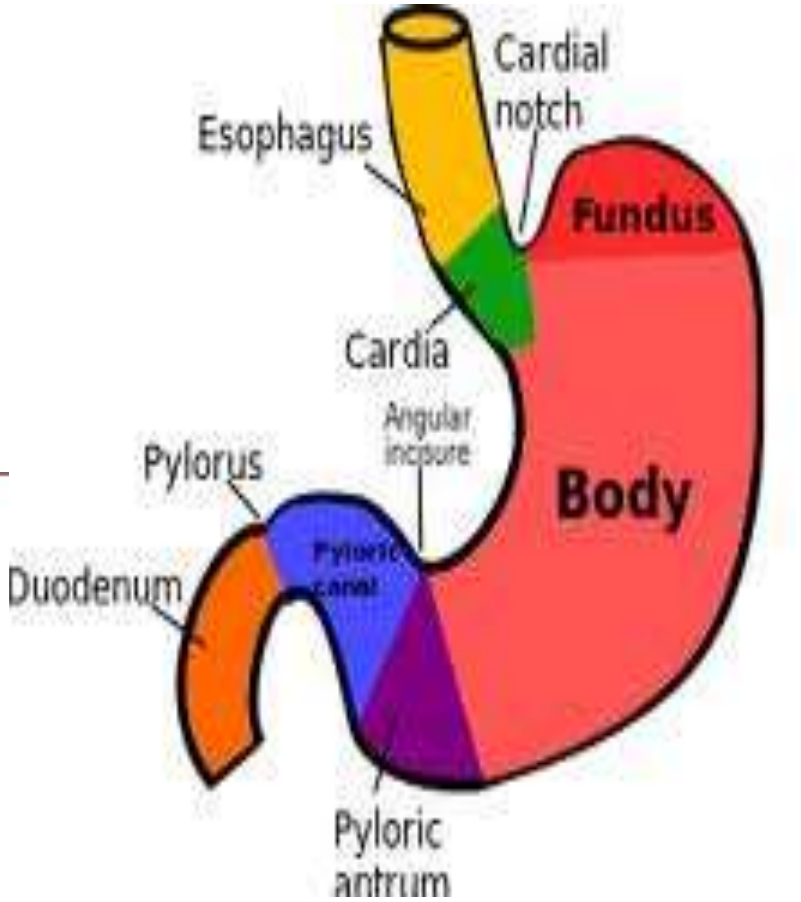


BASIC GASTRO INTESTINAL TRACT

Stomach:

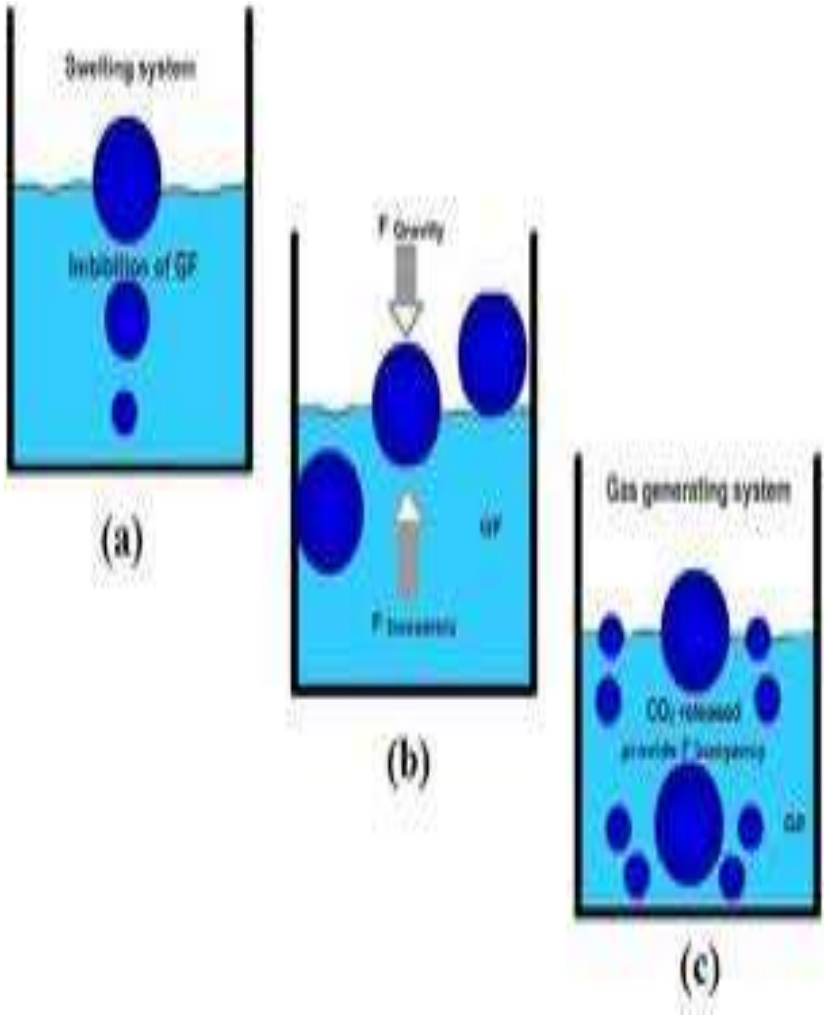
1.Fundus
2.Body
3.Antrum





MECHANISM OF FLOATING SYSTEMS

- FDDS have less bulk density than GI fluids&so remain buoyant in the stomach without affecting GER for prolonged period of time
- F=F Buoyancy-F gravity
- =(Df-Ds)gv----(1)
- Where,F =total vertical force,Df=fluid density
- Ds=object density,v=volume,g=acceleration due to gravity



Factors affecting floating time

- Density, size & Shape of Dosage form
- Single or Multiple unit operation
- FED or UNFED state
- Nature of Meal
- Frequency of Feed
- Age & Gender
- BIOLOGICAL factors

CLASSIFICATION OF FDDS

A Single Unit Floating Dosage Systems

1.Non-effervescent Systems

2.Effervescent Systems(gas generating system)

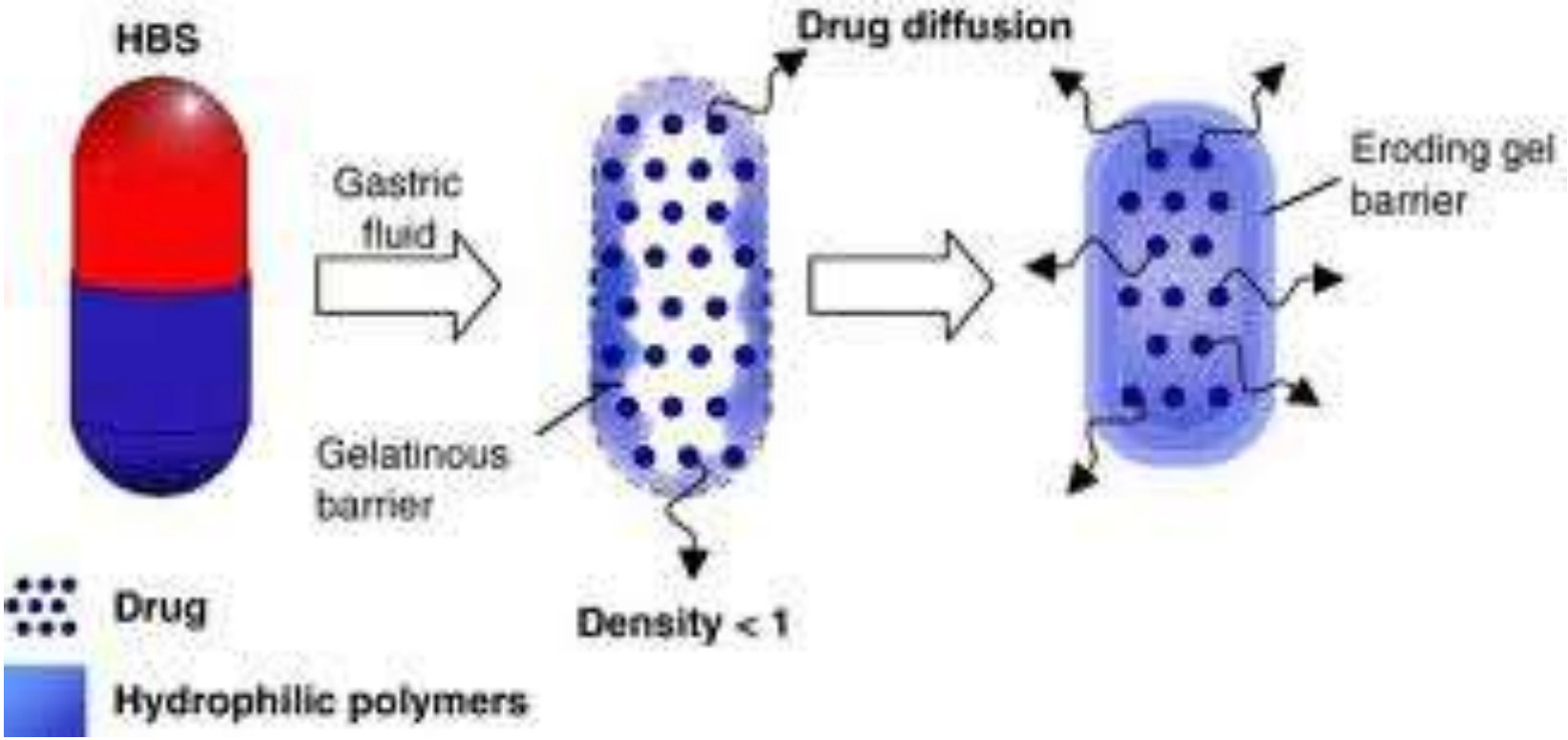
B. Multiple Unit Floating Dosage Systems

1.non-effervescent Systems

2.Effervescent systems

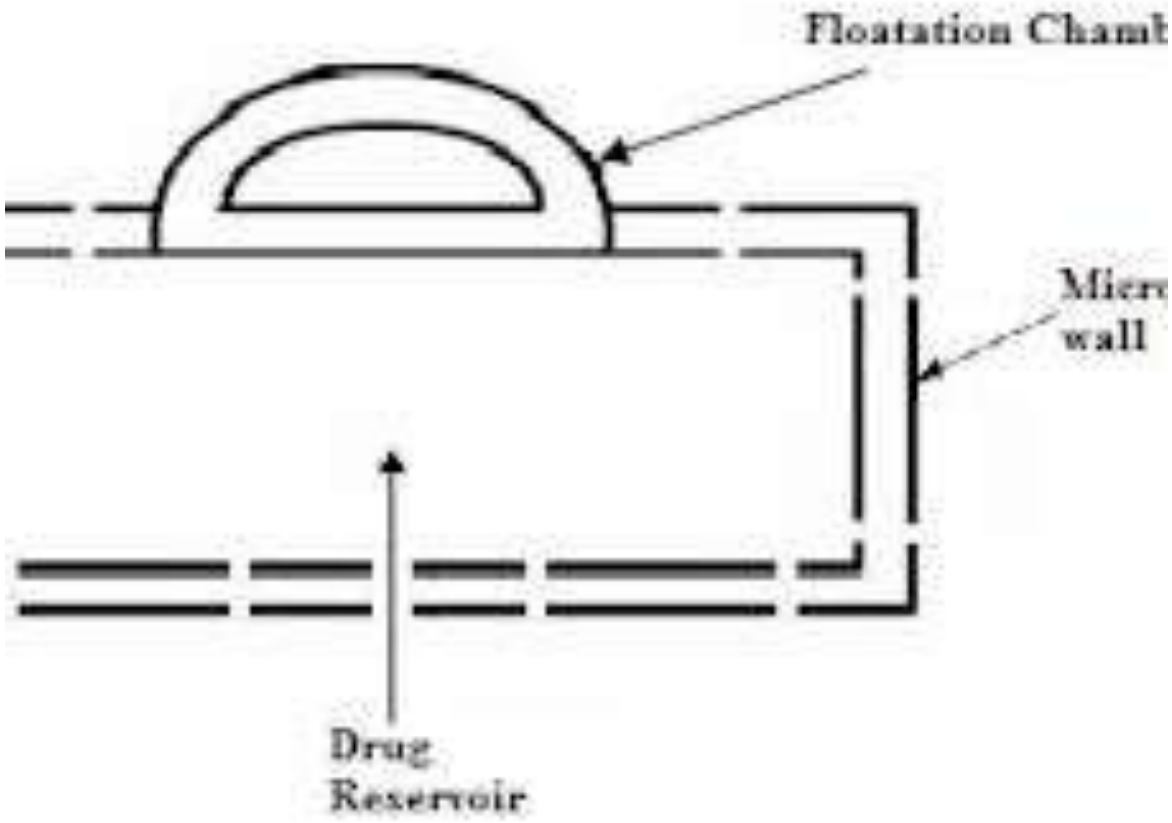
3.Raft Forming Systems

4.Hollow Microspheres



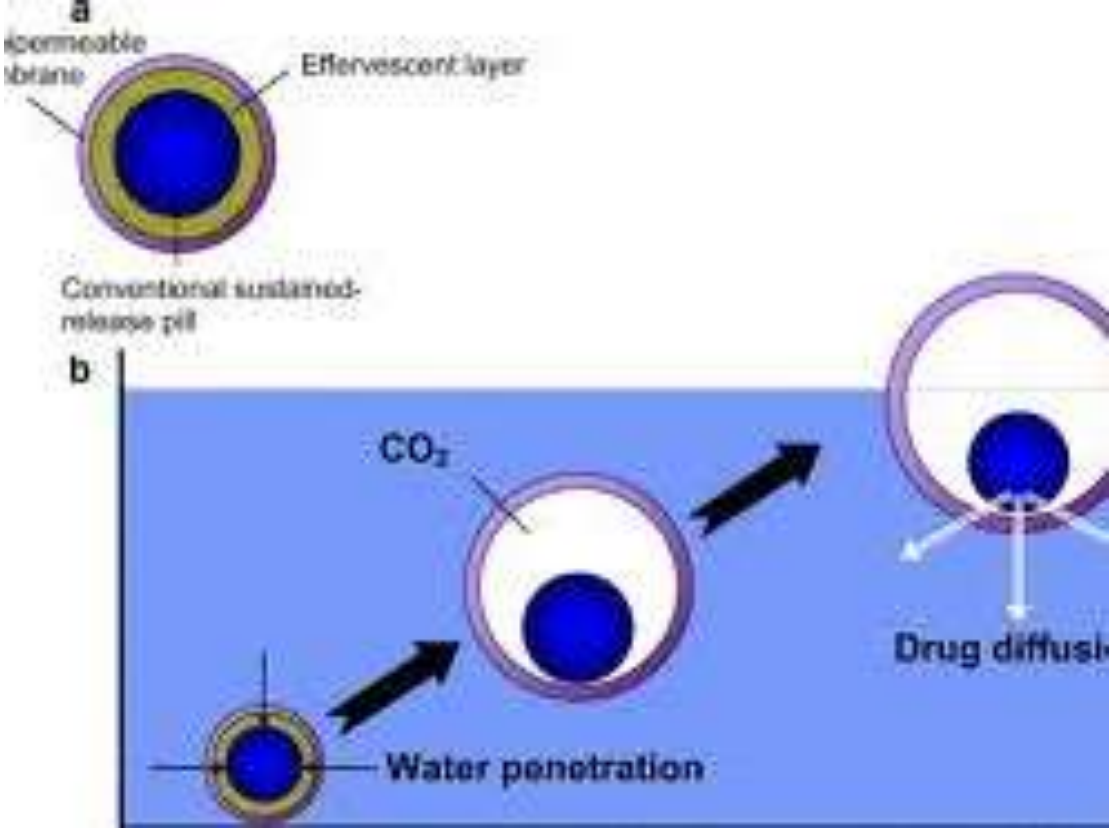
HYDRODYNAMIC BALANCED SYSTEMS

This system contains drug with gel forming hydrocolloids meant to remain buoyant on the stomach content



FLOATATION CHAMBER

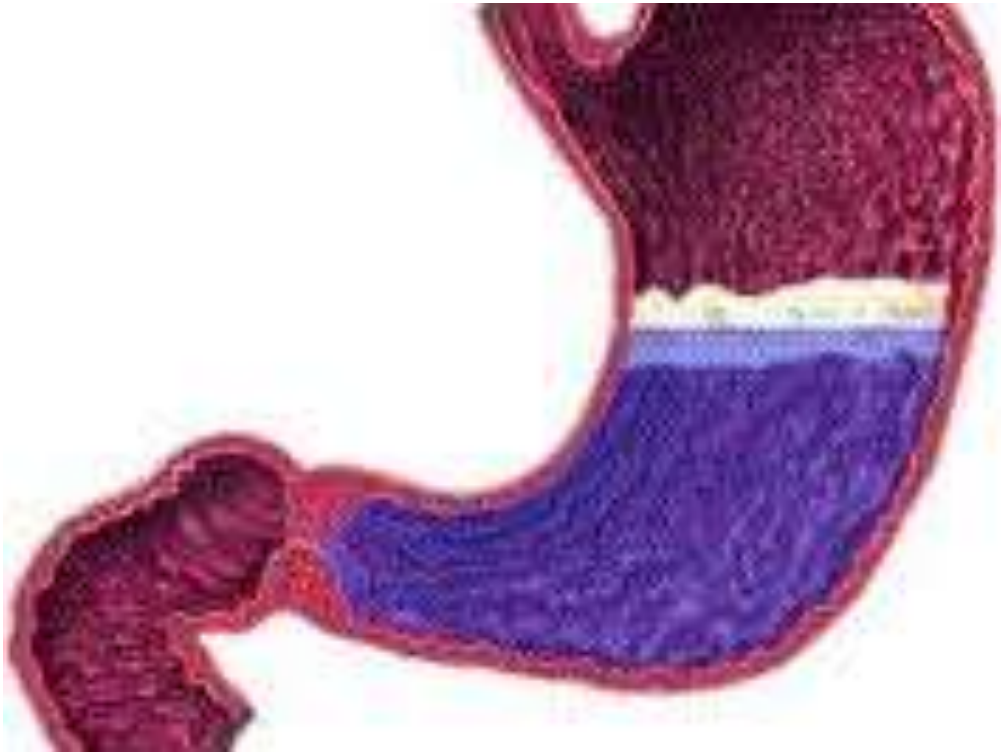
Fluid filled floating chamber which includes incorporation of a gas filled floatation chamber into a micro porous component that houses a drug reservoir



EFFERVESCENT FLOATING DOSAGE FORMS

These are matrix type of systems prepared with the help of swellable polymers such as methyl cellulose and chitosan and various effervescent compounds e.g, sodium bicarbonate,citric acid

They are formulated in such a way that when in contact with the acidic gastric contents co2 is liberated and gets entrapped in swollen hydro colliods



RAFT FORMING SYSTEMS

1.On contact with fluid a gel forming solution is formed this contains co2 bubbles

2.This forms a raft layer on the Gastro intestinal liquid

Advantages & disadvantages of FDDS

ADVANTAGES

✓ These type of drugs can benefit FDDS,they are Drugs acting in Stomach,Poorly soluble in alkaline pH,Rapidly absorbed in GI tract,Degrade in stomach.

DISADVANTAGES

- It requires sufficient high level of fluids in the stomach for the drug delivery to float
- There are certain situations where gastric retention is not desirable

EVALUATION OF FDDS

A.Invitro Methods

1.Floating lag time & floating time

2.Dissolution study

3.Resultant weight test

B.Invivo methods

4.X ray method

5.Gamma-scintigraphy

6.Gastrophy

7.Ultra sonography

CONCLUSION

- FDDS promises to be a potential approach for Gastric retention
- Dosage forms with a prolonged GRT will bring about new and important therapeutic options
- A large no of companies are focusing toward commercializing this technique.
- REFERENCE
- Wikipedia,