

# A Review Article on Floating Drug Delivery System Used in Treatment of the Depression

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**ABSTRACT-** The purpose of written on review on the Floating drug delivery system use in treatment of depression is the main object on floating drug delivery system mechanism, needs and application and the main focus on used in treatment in depression mental state, floating drug delivery system is extreme valuable process and capability to prolong and control the gastric emptying time which domicile in the stomach for long time and floating system is more significance in enhancement of bioavailability and minimize the drug wastages, depression is most serious mental state today many people is know that depression not disease but it is serious mental disease which is cause anxiety etc. And floating drug delivery system is very useful on those drug which have lower bioavailability and in this disease. And in this mental state patients not want to take medicine two to three times because they not feel good and normal and floating system is most useful for patients compliance so floating drug delivery system is very applicable in anti-depressant drug for example Venlafaxine hydrochloride.

**Key word-** Gastro retentive system, Floating drug delivery system, Depression

**INTRODUCTION-** Oral drug delivery system is aid to arrive to resistance to change of position therapeutic plasma drug concentration in to the preparation. These drug dosage forms disclose good patient compliance and assumption drug release profiles. Moreover these were not constructed to counter the difficulties attached with physiological position of the human body that are gastric emptying which more important effectual the bioavailability and in turn the curative capacity to produce a desired effectual of the drug dosage forms. Thus gastro retentive dosage forms such as hydrodynamic balanced systems, modify density system, GIT release the drug in absorption zone and extended the gastric residence duration by antagonistic gastric emptying method. The groups can controller release of the drug in absorption zone before eviction of the dosage form from the human body thence make proper the bioavailability of the drug.

Gastric emptying of dosage forms is an utmost various method and capability to extended and control emptying time is vital plus for dosage forms, which domicile in the stomach for a large time than conventional dosage forms, while the dosage form is lower absorption/non absorbing phase. These kinds of problems defeat by the floating drug delivery system. It is the gastro retentive drug delivery system.

**GASTRO-RETENTIVE SYSTEM-** Gastro retentive system can stay in the gastric site for many hours and thence importantly extended the gastric retention made better bioavailability minimize drug wastage and make better, solubility of drugs that are less soluble in high pH environment. Gastric retention generate newer curative possibilities and substantial profits from patients.

Gastro-retentive system are those dosage form which is able for retain itself in the stomach of gastric content to maximizing the produce absorption drug from medium of acidic in control manner.

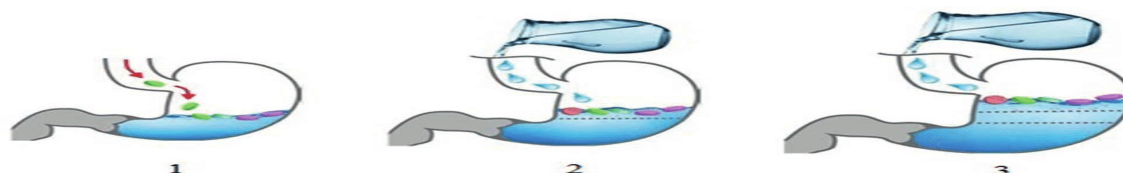
Gastro retentive system are favourable drug which is improving their.

- Bioavailability
- Therapeutic effective
- Possible reduction
- Reduces drug wastage
- Rise solubility for drug that are less soluble in high pH

**FLOATING DRUG DELIVERY SYSTEM-**

Floating drug delivery system are less density which buoyancy is capable amount for float over the gastric content. It stay buoyant in stomach without affective gastric empty retention time. Conclusion maximize the gastric retention time for better control of fluctuation in plasma drug concentration.

Devis is primarily introduce the floating system that floating drug delivery system to use the difficulty of swelling of dosage form and presented the modern gastro retentive drug delivery system to the pharmaceutical or pharmacy industry. Today the more of effectual control drug release dosage form.



### FLOATING DRUG DELIVERY SYSTEM

The main purpose of floating drug delivery system is arrive assuming and maximize in bioavailability. Today pharmaceutical scientist are mostly participate in development of floating drug delivery system. The dosage form has vantage of once dose for cure and should be deliver the active drug material directly at specific site. Floating system is beneficial as drug with narrow absorption window, which is importance for local action to other dosage form of tablets which are absorbed in the stomach. Floating drug delivery system will maximize the bioavailability of the drug from by floating dosage form in the stomach for large duration and produce for extended time and these several kinds of system are significant for narrow absorption. Useful the special category of the dosage form. Gastric emptying is most fast in fasting stage, bulky in the presence of food to slow emptying and give important liquid for efficient buoyancy.

#### NEEDS OF FLOATING DRUG DELIVERY SYSTEM-

- The Transitional gastric emptying time is reason of drug absorption.
- Drugs which are absorbed from the site of gastro intestinal tract.
- Local delivery system or sustained drug delivery system from the stomach.
- Drugs which are low soluble or degrade in alkaline. They are encounter at the gastro intestinal lower part.
- Mostly applied in cure in peptic ulcer.

#### IDEAL CHARACTERSTICS OF FLOATING DRUG DELIVERY SYSTEM-

- The floating drug delivery system is should be maximize the bioavailability.
- It should be provide beneficial systematic effectual.
- Applied of those substance which provide maximum bioavailability.
- Drugs, which are primarily absorbed in the stomach and upper site of gastro intestine.
- The absorption of drug in gastro intestine tract with narrow window absorption.
- The drug acts local in the stomach.
- The drug which are unstable in the colon.
- Should be enhancement effectual for in treatment and should be low adverse effect.
- It should be nice stability.

#### IMPORTANCE OF FLOATING DRUG DELIVERY SYSTEM-

- Drug dosing is low
- The adverse effect of drug is low
- The cure of gastric disorder is useful.
- The dosage form of drug is applicable for firstly absorbed in gastro retentive intestinal tract.

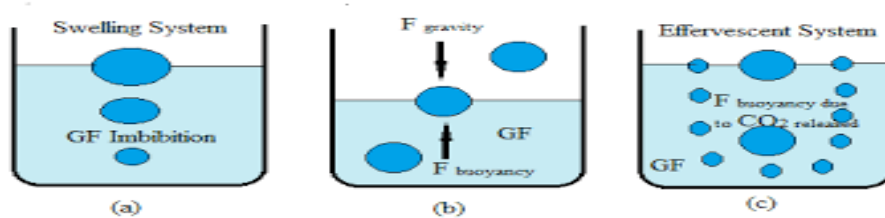
**MECHANISM OF ACTION-** In this system after releasement of the dosage form, the residuary system is nothing to contained from the gastro intestinal tract, conclusion maximize the gastro retentive time and better determine the fluctuation in the plasma drug concentration.

Static, Moreover a lowest gastric content useful to permit the appropriateness accomplishment of buoyancy retention base, a lower flat of the floating force (F) is permit is needful the jog the drug dependable buoyant on the surface of the repast. Lower gastric content is useful to permit the accomplishment rightness for buoyancy F is the function duration that needful primary

recessed the object first is the float is nice F is on maximize positive side. The setup is needful in bar the hindrance, the buoyancy ability fluctuation.

$$F = f \text{ buoyancy} - F \text{ gravity} = (D_f - D_s) g v$$

Where F= total vertical Df= fluid density Ds= object density v= volume and g= acceleration due to gravity.



### MECHANISM ACTION OF THE FLOATING DRUG DELIVERY SYSTEM

**ADVANTAGES OF THE FLOATING DRUG DELIVERY SYSTEM-** The legion of the floating drug delivery system are following as.

- Extended release of the administered drug from the several kinds of the dosage form like tablets, capsules, microspheres of the system.
- The Floating system is enhance the bioavailability.
- This system is more desirable the proper of being selective in receptor activation.
- Large effectual concentration.
- For the local infirmity marked therapy of the method in the upper site of the gastro intestinal tract.

### FACTOR AFFECTING THE FLOATING DRUG DELIVERY SYSTEM-

- **DENSITY-** Density of the gastric retention time dosage form function from buoyancy which is to be contingent upon the density because of density of dosage form is effectual the gastric emptying rate, While buoyancy of the dosage form is effectual the gastric emptying rate, when buoyancy is lower than gastric emptying rate than system is float.
- **SIZE AND SHAPE-** The size and shape of dosage form is also effectual the gastro retention, the ring contour of devices have superior to another gastric residence time as comparability with another shapes.
- **NATURE OF MEAL-** Eating of digested with difficulty polymers and fatty acid and salt can modify the form of the stomach hence minimizing the gastric emptying rate and extending the release of the drug.
- **GENDER-** Lower gastric emptying rate of the female candidate than male candidates.
- **MENTAL STATE-** Stress will be maximize in the gastric emptying rates whereas depression low it down.
- **AGE AND POSTURE-** Elder candidate particular those over 70, have an important larger gastro retentive time. Slower the gastric emptying time of the duration ascertained in elder. Gastro-retentive time can alter between indolence and consecutive posture province of the patients.

### TYPE OF THE FLOATING DRUG DELIVERY SYSTEM-

There are two types of the floating drug delivery system-

#### A)-EFFERVESCENT TYPE OF FLOATING DRUG DELIVERY SYSTEM-

#### B)-NON EFFERVESCENT TYPE OF FLOATING DRUG DELIVERY SYSTEM-

**EFFERVESCENT TYPE-** Effervescent type of the floating drug delivery system is also known as the gas generating system which is formulated by the aid of the swelling type polymer such as methyl cellulose, chitosan and several type of effervescent compound like sodium bicarbonate, tartaric acid and citric acid. The relative magnitudes of two quantities of citric acid and sodium bi carbonate is optimal stoichiometric for gas generating in the floating is slightly convexity of the drug delivery system can be neglected by inert gas CO<sub>2</sub> by effervescent chemical reaction between organic acid citric acid and carbonate.

**MECHANISM OF ACTION-** Effervescent system are formulated with aid of the swelling polymers and several types of the effervescent type compounds are apply in formulation when they come in attach with acidic gastric content then they freedom CO<sub>2</sub> and gas ensnare in swollen hydro colloids which furnish buoyancy to the dosage form.

**NON EFFERVESCENT TYPE-** Non effervescent system is made by gel forming largely swell cellulosic hydrocolloids HPMC hydroxyl propyl methyl cellulose, polysaccharides, matrix polymer in large (20%-75%) to tablet capsule, it is non effervescent swelling system. In this technology dosage form is attaches mixing of drug with gel that is swell close interaction with after administration of oral and keep a comparative unity of shape and bulk density of lower than 1.

**MECHANISM OF ACTION-** After swallowing bang up investment via absorption of a liquid by a solid or gel of gastric fluid to the point which is preclude their outlet from the stomach non effervescent type system is also known as plug type system. First forming a gel at the surface of the dosage form is mechanism of swelling of polymer or bio adhesion to mucosal bed in gastro intestinal tract hydrate by first formed a gel on the surface of drug dosage, conclusion construction of a gel power to determine the diffusion of solvent-in and drug out of the dosage form. Having base on the mechanism on the swelling of polymer or bio-adhesion the mucosal bed in gastro intestinal tract. Resultant diffusion rate of solvent in drug out from dosage form controlled by the gel emphasis.

#### **APPLICATION OF THE FLOATING DRUG DELIVERY SYSTEM-**

Several type of application of floating drug delivery system are following as-

- **Maximize the bioavailability-** Gastro retentive floating drug delivery system is applied for extended the activity of the dosage form, drug to extended action bioavailability is maximize.
- **Action sustained drug delivery-** The oral controlled release formulation are skirmished with difficulties that is gastric residence in gastro intestinal tract. To defeat with floating drug delivery system can stay in the stomach for long time of the gastric fluid.
- **Drug Delivery System act on specific site-** Gastro retentive floating drug delivery system act decently in specific location of drug delivery system and give appropriateness action that Vantages for dosage form by these system which is in distinction from other absorbed from the stomach. Controlled drug delivery system is lower and furnish the quantity that can fulfil a need local curatives levels and boundary the systemic vulnerability to the elements to the dosage form. Drug in blood circulation is cause minimize the adverse effect. Furnished the accessibility gastric from spot directed delivery system may also decrease the dose frequency E.G Furosemide and riboflavin.
- **Minimize the absorption-** The dosage form have less bioavailability specific site absorption from the upper part of gastro intestinal tract. Enhancing the absorption of the dosage form.
- **Decrease the adverse activity of the colon-** Holding of the dosage form in the gastro retentive system decrease the amount of drug that arrives the colon.
- **Minimize & fluctuation of drug concentration-** The fluctuation in drug effectual are reduced and concentration be contingent side effect reduction can be prevented. Special significant for dosage form with a narrow curative index.

#### **DEPRESSION**

Depression is also known as the Major depressive disorder. The most common and serious medical illness that is negative effectual on feelings, the mode your and how your act, But its treatment is available, depression cause by the emotional state of the feelings of dreary and also lost of interested activities of the joy and happiness. Depression is mainly assortment of emotional and physical difficulties and minimize in ability to process of work at the home and another working place.

- Feeling down in depression situation- change in brain chemistry cause the depression position. Most scientist or researchers says about depression which is depression is caused by these several factors which is-
  - Hormonal Factors
  - Medical Factors

Depression is the situation of unhappy and sorrow. Today the mostly people suffering from depression because of our modus vivendi is so horrendous. While person are in depression, person provender at every point sad for few days, weeks or months or only some days. Some people think depression is common like normal state and not a real health status but this not correct thought, Depression is real disease with original sign and symptoms. It is not kind of weakness, but treatment is possible and most of person is cure or recover the disease of the depression.

Depression is trivialities status but it is commonly is present in today life. W.H.O World health organization is display the several suffering person how they overcome the depression. And also present the report how many people suffering by this disease 1 in 5 women and 1 in men at same point life duration of time 21% of women and 12% of men are suffering from the depression.

#### **SIGN & SYMPTOMS OF DEPRESSION-**

- A) Feeling of unhappiness, hopelessness can give the depressive temper.
- B) Involvement in joy and pleasure is minimize or almost lost.

- C) Feeling guiltiness also occur in depression condition cause the weight loss or weight gain in appetite.
- D) Problem generate in making decision of thinking or in disease condition.
- E) Angriiness is over much in depressive mood.
- F) Loss of interest in friend family party or get together activities in depression.
- G) Biochemistry- Changes of chemical reaction in brain chemistry may be cause of sign and symptom in disease of depression.
- H) Genetics-Depression in hereditary from families 70% of chance cause by the generation.



**A PERSON WITH DEPRESSIVE MOOD**

### **TREATMENT OF THE ANTI DEPRESSANT-**

- A) **Selective serotonin reuptake inhibitors (SSRIS)** - The selective serotonin reuptake inhibitor (SSRIS) are more general and famous category which is prescribed for anti-depressant this antidepressant are general by accessible for example Paxil, Prozac, Zoloft other drug for bipolar disorder.
- B) **Serotonin and Noradrenaline reuptake inhibitors (SNRI)** - The category of antidepressant is newest types of antidepressant is newest type of anti-depressant. The name of this category of drug is (SNRI). So the name of class presented their action this is used in block the process of using up of both serotonin and norepinephrine Duloxetine, Venlafaxine etc.
- C) **Norepinephrine and dopamine reuptake inhibitors (NDRIS)**-Only once of drug bupropion. The drug give effectual on the consuming again of norepinephrine and dopamine.
- D) **Other Antidepressant-**
  - 1. **Tricyclics**- Tricyclic are other class of antidepressant that is mirtazapine etc. This type of drug show effectual on neurotransmitters but does not forbid reuptake in the same mode.
  - 2. **Older**- It is applied for treatment of depression, tricyclic and MAOIS were not better situation for individual who was diagnosed just, but sometime it is aid with treatment immune depression like anxiety. Like Imipramine, Nortriptyline etc.

### **Treatment resistant depression (Antidepressant)-**

- 1- **Monoamine oxidase inhibitor (MAOIS)** is natural enzyme which is crush the serotonin, epinephrine and dopamine, conclusion neurotransmitters become encouragement. Downside of MAOIS forbid the capability of crush to another medicines metabolism by that and increasing in value of High B.P that is more danger.
- 2- **Nutraceuticals or medical food**- Prescription of also called as an essential vitamin B6, B. frequent of depression lower level of folate effectual on neurotransmitters that control temper and L-methyl folate proof to effectual in modulate the formation of neurotransmitter. SSRI selective serotonin reuptake inhibitor first on market in 1988. This class of drug is mostly prescribed.
- 3- **Non medicated treatment**- Exercise may be aid against mild depression. Its neurotransmitters  
Brain simulation treatment attached electro conclusive therapy electro conclusive therapy used in depression. Professional like psychiatric hagiologist and nurse or physicians.  
Psychotherapy is called as talk-therapy applied alone for therapy of extreme depression with anti-depression medication For example family or couples therapy.  
Cognitive behavioural therapy found in therapy of depression. It is focused on current and difficulty solving and identified malformed thought and then change behave and thought.

### **Floating drug delivery system applied in anti-depressant-**

Depression is serious disease at this time because of stress and many anti-depressant used in treatment of the depression floating drug delivery system used in enhancement of bioavailability then increase the action due to prolong duration time at GIT drug give extent action and minimize the dose and act on specific site, so depression is type mental disorder this system is very applicable. Because person is suffering from the depression create difficulties in dosing and because of extent stay at gastric site of floating system which is minimize the dose frequency this is so important properties of this system is used in anti-depressant medicines as well as give action on specific site this is very helpful.

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