



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Review On Details Study of Suppositories

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Abstract

Suppositories are solid lozenge forms intended for insertion into body perforations where they melt, soften, or dissolve and ply localized or systemic goods. Lozenge form characteristics. Rectal suppositories for grown-ups weigh 2 gm and are torpedo shape .A suppository is a medicated solid dosage form generally intended for use in the rectum, vagina and to a lesser extent, the urethra .After insertion they melt or soften at body temperature, whereas vaginal suppositories sometimes called as pessaries, are also made as compressed tablets that disintegrate fluids. Suppositories are solid, single-dose preparations. The shape, volume and consistency of suppositories are suitable for rectal administration.

Suppositories are special shaped solid or stiffened semisolid dosage forms for insertion into body cavities like rectum, vagina or urethral tract. Either molded in definite size and shape Used to produce local, systemic effects After insertion they melt or soften at body temperature, whereas vaginal suppositories sometimes called as pessaries, are made to disintegrate in body fluids Suppositories are ideal for infants, elderly individuals and post-operative patients, who are unable to swallow oral medications, and for individuals experiencing severe nausea and/or vomiting.

Keyboard

Suppositories, lozenges, Renal, Perforation, Torpedo shape, Application.

Introduction

Suppositories are solid lozenge forms intended for insertion into body perforations where they melt, soften, or dissolve and ply localized or systemic effect ¹

Is comes under semi solid medication because it's prepared by melting all constituents(bases and other complements along with active component). All types of suppositories are melt at normal body temperature after introducing in body depression and produce their effect² Suppositories are composed from an excipient that melts at body temperature. It can be a natural fat(cocoa adulation) or a polyethylene- glycol(Carbowax). They're simply fated to be introduced in the anus. They allow a rapid-fire action because the rectum is plushly rinsed, also, they avoid loading the digestive system³.

Ovules are fated to be introduced in the vagina, so as to ply a original action. They're generally constituted of a dissolution of the active principle in a soft gelatin. Ointments are coatings that one spreads on the skin or on mucus. They're generally used for the treatment of cutaneous or subcutaneous lesions. Suppositories are preferred for cases having difficulty in swallowing or in unconscious state and also for individualities who suffer from nausea, puking and gastrointestinal ulcers.. The ideal of the present work is to study the part of ghee as a suppository base in combination with beeswax. The effect of addition of hydroxy propyl methyl cellulose(HPMC) on sustained release of medicine from the suppository bases is also studied.



Figure no .1



Figure no.2

Supplements are semi-solid lozenge forms used to deliver medicines to the body by fitting them into concave areas(like the rectum, vagina,etc.) and melting at those points to perform the remedial effect.

In cases with constipation, suppositories are extremely useful. Suppositories that work as laxatives include bisacodyl suppositories and glycerin suppositories, among others. Hemorrhoids and piles cases can profit greatly from rectal suppositories. The sensation of swelling and discomfort is reduced. Fungal infections within the vagina and urethra benefit from suppositories. Medicines similar clotrimazole and micronize are used. As The accoutrements that are used in suppository bases retain their shape and reliability. Polyethylene glycol, Theobroma oil painting, glycerogelatin.

ADVANTAGES OF SUPPOSITORIES

- Can be used fluently children, old person, unconscious patient⁶.
- Avoidance of oral and parenteral routes
- Avoid first pass metabolism
- Cover medicine from harsh conditions in stomach
- Medicine causes nausea and puking
- Oral input confined before surgery Can be targeted delivery system
- Localized action reduced systemic distribution
- Rectum vagina & urethra poor blood inflow
- Get to point of action with lower cure
- Reducing systemic toxin

DISADVANTAGES OF SUPPOSITORIES

- Suppositories aren't suitable for cases suffering from diarrhea.
- In some cases the total quantum of the medicine must be given will be moreover too prickly or in lesser quantum than nicely can be placed into suppository.
- Deficient immersion may be attained because suppository generally promotes evacuation of the bowel.

Types of suppositories

Renal suppositories

The rectal dosage forms are not common because of cultural and psychological bases there are Several advantages to administration by rectal route. In cases of nausea and vomiting act taking medication orally may induce emesis so that drug is Vomited before it absorbed. Irritation to the stomach and small intestine associated with certain Drugs can be avoided. Hepatic first pass elimination of high clearance drug may be avoided Partially. Its contact with digestive fluid is avoided, thereby preventing acidic and enzymatic In cases of nausea and vomiting act taking medication orally may induce emesis so that drug is vomited before it absorbed. Irritation to the stomach and small intestine associated with certain drugs can be avoided. Hepatic first pass elimination of high clearance drug may be avoided partially. Its contact with digestive fluid is avoided, thereby preventing acidic and enzymatic degradation of some drug. When oral intake is restricted such as prior to x- ray studies, before surgery or in patient having diseases of upper GIT or when patient is unable to swallow. It is useful in pediatric, geriatric and unconscious patient specially having difficulty in swallowing oral medicine 1. Drug delivery can be stopped by removing the dosage form and drug absorption can be easily interrupted in cases of accidental overdose or suicide attempts. Drug which traditionally is only given parentally may be administered rectally. These advantages for rectal dosing require devices or formulations with specific features to give the desired drug delivery system.

Peptides and many other hydrophilic drugs are primarily developed as parental formulations because of poor bioavailability after oral dosing. For example, because the absorption site is near for administration site. Rapid absorption with a rapid increase in plasma drug level can be achieved. Formulations can be readily prepared to provide desired release characteristics. To maintain high concentrations of the drug and additives at the absorption site are possible. The rectal absorption of drugs have also appeared in the US and Japan where suppositories had not been previously well accepted from the cultural or emotional points of view. For a long period of time the rectal route was used only for the administration of local anesthetics, asthma, and nausea, anti-hemorrhoid, vermifugal and laxative agents, and bacterial infections. Now the majority of natural and synthetic drugs are also formulated in the form of suppositories to produce a systemic effect. The elimination of drugs subject to the first-pass effect in liver or in gastrointestinal tract may be partially avoided by rectal administration. The major disadvantages of rectal suppositories; they are not preferred by patients; they are inconvenient. Rectal absorption of most drugs is frequently erratic and unpredictable. Some suppositories “leak” or are expelled after insertion

APPLICATION OF RECTAL DRUG DELIVERY

Controlled release dosage forms

The constant conditions of rectum environment offer interesting possibilities for controlled rectal drug delivery in an osmotic device with zero order drug delivery. In its

Characteristics, constant steady state concentrations in plasma and saliva were obtained. Concentration time profiles were not influenced by defecation and renewal of dosage form. It also used to study pharmacokinetic interactions and intensity time course of drug effects in steady-state.

Controlled rectal absorption enhancement

The rectum is quite constant and the rectal route has been considered to be interesting to achieve controlled rectal absorption enhancement of drugs. In addition the area under plasma concentration time curve (AUC) was significantly larger by following rectal infusion than rectal bolus administration. This indicates that the rate of administration of drug together with enhancement of rectal absorption is an important issue for resulting (AUC). Its recovery from cellular damage cause by absorption enhancers and the possibility of absorption and other compounds such as end toxins.

In case of repeated dosing and therefore information about repair it is necessary to apply safely for absorption enhancement. However, the liver functions important organ for detoxification which seems to reduce part of safety issues less importance although the partial by pass of liver following rectal delivery represent a compromising circumstance. This relationship is complicated by pharmacokinetics (absorption rate, dose, etc., which influences the kinetics of enhancer in particular its concentration-time profile at its site of action) and the pharmacodynamics (intensity and duration of effect, etc. which determines its concentration-effect relationship) of the enhancer

There may be substantial species differences in the rectal absorption enhancing effects. The extent and rate of drug absorption and the bioavailability of absorption enhancement and it's dependent on the concentration of enhancer at the apical membrane in rectal lumen. If the concentration changes absorption of enhancer like $(t = 0)$ the apical membrane. Administration of drug with and without enhancer was assumed to be a bolus solution

Sustained-release dosage form

It is quite observed in absorption or release of drugs from suppositories so this effect called lag time. However, it is not often considered for calculation of the area under the curve (AUC) and area under the first moment curve (AUMC) Plasma concentration \odot -time (t) plots of many drugs from suppositories are characterized by the difference in two exponentials:

$$C = Be^{-\lambda_2 t} - Ae^{-\lambda_1 t}$$



Figure no.3

The Ideal Suppository Base

1. The ideal suppository base may be described as follow forms.
2. Having reached equilibrium crystallinity, the maturity of factors melt at rectal temperature 36 °C but bases with advanced melting ranges may be employed for eutectic fusions, addition of canvases , balsams, and suppositories intended for use in tropical climates.
3. The base is fully nontoxic and nonirritating to sensitive and lit tissclimate.
4. It's compatible with a broad variety of medicines.
5. It shrinks sufficiently on cooling to release itself from the earth without the need for earth lubricants.
6. It has wetting down and emulsifying parcels.
7. The “ water number ” is high, i.e., a high chance of water can be incorpo rated in it.
8. It's stable on storehouse, i.e., doesn't change color, odor, or medicine release pattern.
9. It can be manufactured by molding by ei there hand, machine, contraction, or extrusion. Imbedilibriumcrys
10. If the base is adipose it has the following fresh conditions(11) “ acid value ” is below0.2;
11. “ saponification value ” ranges from 200 to 245;
12. “ iodine value ” is lower than 7;
13. The interval between “ melting point ” and “ solidification point ” is small or the SFI wind is sharp.

Evaluation of Suppositories

The literature is well proved with test styles to assure that each manufactured lot of suppositories constantly meets the norms established during the manufacture of early experimental lots. Finished suppositories are routinely audited for appearance, and after being sliced lengthwise, for uniformity of the blend. They're assayed for active constituents to insure that they collectively conform to labeled content. Melting range tests are performed to check the physical and immersion characteristics of each manufactured batch. Fragility tests are carried out to ascertain that the suppositories can be packaged and packed with minimum breakage.

Test of Appearance

All the suppositories should be invariant in size and shape. Individual suppositories should be examined for cracks and recesses due to the ruse of air in the molten mass²⁵

Breakage Test

(Test of physical strength) The tensile strength of suppositories is measured in this test to assess their capability to repel the adversities of normal running.

The outfit used is called the breaking test outfit. It consists of a double- wall chamber. Through the walls of the chamber, water is pumped. The inner chamber consists of a slice that holds the suppositories. To this slice, a rod is attached. The other end of the rod consists of another slice on which weights are placed²⁵.

Test of Dissolution Rate

It's the quantum of lozenge form that gets dissolved in body fluid in unit time. It's a measure of the rate of medicine release from the suppository.

Two types of outfit are available for testing the dissolution rate.

Suppository dialysis cell Lipophilic suppositories are tested using a suppository dialysis cell, which is also called a modified inflow- through cell.

Stationary handbasket Rotating paddle outfit(USP dissolution test outfit). Hydrophilic suppositories are tested using a stationary handbasket rotating paddle outfit.

Melting Range

melting range and micro suppository can be used for original or systemic effect. The action depends on nature of medicine, attention and rate of immersion Rectal suppository are intended for treatment of constipation and hemorrhoids.

Suppositories are also administered for systemic action. Suppositories as a medicine delivery vehicle, while an established form, is a new expression in the environment of antiviral medicine delivery

melting range are determined as follows

Macro melting range It's a measure of the thermal stability of the suppository. It's the time taken by the entire suppository to melt in a constant temperature water bath. The test is conducted using the tablet decomposition outfit. The suppository is immersed in a constant water bath.

Micro melting range The melting range of the adipose base is measured in capillary tubes²⁵.

Liquefaction time(softening)

Softening time is the time for which the suppository melts fully at a definite temperature. This test measures the softening time of suppositories which indicates the hardness of the base.

A liquefaction temperature/ time test was done using the fabricated instrument. A big pipette was taken having a narrow opening on one side and a broad opening on another side. The pipette was dipped in hot water maintained at 35 ± 0.2 °C so that the narrow end faces towards hot water. The sample suppository was introduced from the top of the pipette through the broad end and precisely pushed down its length until it reaches the narrow end. A glass rod was also fitted so that it rests over the suppository. The temperature at which the glass rods just come down was noted, which represents the liquefaction temperature. The time at which the glass rod reaches to constrict end after complete melting of suppositories represents the liquefaction time^{26, 29}.

Storage

Suppositories should be defended from heat, rather by storing in the refrigerator. Polyethylene glycol suppositories and suppositories enclosed in a solid shell are less prone to deformation at temperatures slightly above body temperature. Glycerinated gelatin suppositories should be defended from heat, humidity, and dry air by packaging by well-sealed holders and storing in a cool place.

Stability Problems of Suppositories

Blooming During storehouse cocoa adulation suppositories occasionally show deposit of white greasepaint on the face. This results in suppositories of disagreeable appearance.

Hardening During storehouse, the suppositories made of adipose bases come hard. Hardening is passed due to the crystallization of bases. This also affects the melting and rate of immersion of medicines.

Conclusion

The release of medicine from suppository bases is one of the important factors in the details study of Suppositories to give the remedial uses and conformation of the Suppositories Bases. The manufacturer and evaluation of suppositories are the colorful factors. Suppository can be used for original or systemic effect. The action depends on nature of medicine, attention and rate of immersion Rectal suppository are intended for treatment of constipation and hemorrhoids. Suppositories are also administered for systemic action. Suppositories as a medicine delivery vehicle, while an established form, is A new expression in the environment of antiviral medicine delivery

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