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MEDICATED LOLLIPOPS FOR PEDIATRICS

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ABSTRACT

Due to its low cost of therapy, simplicity of administration, patient compliance, and formulation flexibility, oral medication is the most widely used method of drug delivery. Certain patients, particularly those who are young or elderly, find the act of taking oral medication to be highly unpleasant. One of the most popular antipyretic and analgesic medications for treating fever and headaches is paracetamol. Dysphagia, or difficulty swallowing, is prevalent in older and pediatric patients. Therefore, a solid medication in an easy-to-swallow form is required; lollipops are one such example. The primary goal of this research project is to produce a drug that is both effective and pleasurable to take. A lollipop is a kind of sugar confection that is typically made composed of hard candy that is arranged on a stick for sucking or licking. There are many flavors and styles of lollipops available. Alternative names include sticky-pop, Lolly, and sucker. Although there are many dosage forms available on the market, it can be necessary to have an additional dosage form that functions both locally and systematically. The benefits of current research include longer dosage form retention in the oral hollowspace, higher bioavailability, and a decrease in gastric inflammation through first metabolism. Lollipops are medicinal dose forms with flavors that are meant to be sucked and kept in the mouth or throat. The sweetened foundation of the lollipops typically contains one or more additional medications. The customary dosage for medications, tablets, and syrups.

KEYWORDS: Medicated lollipops, antipyretic, headache, analgesic, dosage forms.

INTRODUCTION

Generally, medicated lollipops are used due to patient acceptance. Mostly lollipops are developed for the small childrens, due to easy administration for childrens.

HISTORY

The concept of an suitable for eating sweet on a stick is quite simple, and it is probably that the lollipop has been invented and reinvented numerous instances. The primary confectioneries that intently resemble what we call lollipops date to the center a long time, when the aristocracy could often devour boiled sugar with the aid of sticks or handles The term 'lollipop' changed into recorded via English lexicographer Francis Grose in1796.[8] The time period might also have derived from the time period "lolly" (tongue) and "pop" (slap). The primary references to the lollipop in its contemporary context date to the 1920s.[1]

The most commonly given non-steroidal anti-inflammatory medicine (NSAID) is paracetamol, sometimes known as acetaminophen. It is 4-hydroxy acetanilide chemically. It is among the most widely used "over-the-counter" pain relievers for musculoskeletal discomfort, mild migraines, headaches, dysmenorrhea, etc. When used as directed, paracetamol is usually safe for human consumption. However, excessive dosages of paracetamol have the potential to harm the liver, and in certain cases, even a standard dosage can have this effect.

When a pharmaceutical dosage form is of consistent quality, both safety and efficacy can be assured. Pharmaceutical dosage forms' effectiveness is typically based on their formulation characteristics and manufacturing processes, so dosage form quality may differ.[2]

The oral route of drug administration is the most commonly used route of drug administration because of low-cost therapy, ease of administration, patient compliance, and flexibility in formulation. However, pediatrics, geriatrics, and bedridden patients show inconvenience swallowing of conventional tablets or capsules due to difficulties in swallowing with lesser amounts of water with the medication, unable to tolerate the taste of many drugs when formulated as liquid dosage forms, resulting in poor patient compliance.[3]

Numerous strategies and attempts were made to improve patient compliance with dosage forms, and since developing new drugs is very expensive, pharmaceutical companies are concentrating on creating innovative drug delivery methods for their current products.[4]

Some of these approaches somehow improved patient compliance, but still, no dosage form gives optimum compliance. However, there is a need for a solid form of medicine that is in a form that easy to take and swallow. As previously mentioned, one of the main issues with

patients in their pediatric and geriatric years is that they are unable to take medications orally, which means that they must take them as solutions or suspensions. However, the majority of these specially prepared medications taste bitter, even when they are disguised or made with sugary syrup. The fact that these preparations will enter the body through the intestines and be metabolized (first-pass effect) in the liver presents another issue. Because young patients refuse to take their medications, they will therefore need to be dosed more frequently, which is considered noncompliance.[5]

That's when products like medicated candy lozenges and lollipops emerged, and as it turned out, they had a lot of benefits, especially lollipops. These challenges needed to develop new methods to overcome them and produce a formula that will be effective and appealing to consumers as well.

The body's natural reaction to any type of inflammation, whether it be bacterial or viral, is an increase in body temperature, and fever is a common complication that most diseases in humans cause. Because paediatric patients' immune systems are still developing and most antigens are unfamiliar to them, they frequently get fevers. This is because the body needs to go through the entire inflammatory cascade in order to properly generate antibodies. Doctors are concerned about the child's health because of the extremely high body temperature. Since that very high body temperature can risk the child’s health; physicians tend always to prescribe antipyretic drugs like paracetamol or ibuprofen to help the body fight against the disease while maintaining a low-risk temperature and to decrease the discomfort the patient is feeling. Besides, the high safety margin of paracetamol, and its common use in the treatment of fever among pediatric and geriatric patients required to develop a suitable dosage form of this drug which easy to take and swallow by them.[6]

According to definitions, medicated lollipops are hard dosage forms that contain one or more drug types in a sugary, flavored, and colored base. Like other lollipops, these are intended to dissolve slowly in the patient's mouth and release their contents, which may act locally to lessen oropharyngeal symptoms or be absorbed through the buccal route and act systematically.[7]

Antibiotics, antitussives, analgesics, and other types of medications can all be found in Medi-cated Lollipops. For a substance like paracetamol, this kind of formulation helps increase its bioavailability and prevents first-pass metabolism. Additional benefits of this

dosage form include less manufacturing time and expense, better patient compliance, particularly in pediatrics, suitability for patients with swallowing difficulties, and a reduction in the frequency of patient doses because of less drug waste in metabolism.[8]

In light of all these challenges and the advantages of this dosage form, we were determined to develop and produce an effective, cost-efficient, and practical medicated lollipop that contains paracetamol as the prototype. Based on the results we are intended to develop such dosage forms with other commonly used drugs in paediatrics and geriatric patients to improve patient compliance and might be introducing this dosage form in the Palestine market as the Palestinian pharmaceutical market lacks such dosage form.

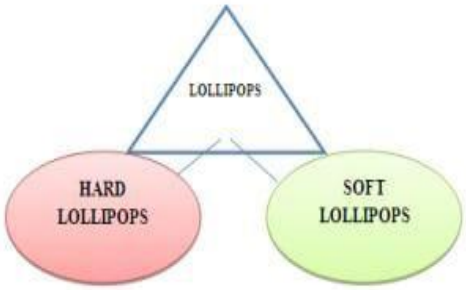
Oral controlled release drug delivery is a drug delivery system that provides the continuous oral delivery of predetermined period throughout the course of GI transit and also the system that target the delivery of a drug to a specific region with in the GI tract for either a local (or) systemic action. All the pharmaceutical products formulated for systemic delivery via the oral route of administration, irrespective of the mode of delivery (immediate, sustained (or) controlled release) and the design of dosage form (either solid, dispersion (or) liquid) must be developed with in the intrinsic characteristics of GI physiology In recent years scientific and technological advancements have been made in the research and development of ratecontrolled oral drug delivery systems by overcoming physiological adversities such as short gastric residence time (GRT) and unpredictable gastric emptying times (GRT). Several approaches are currently floating drug delivery system (FDDS) also known as hydro dynamically balanced system (HBS), swelling and expanding system, polymeric bio adhesive systems and modified-shape systems, high-density systems and other delayed gastric emptying devices. To design the oral controlled release tablet to increase the residence time of the drug into the stomach and release for extended period of time in order to, increase bioavailability of the drug, reduce the dosing frequency and improve patient compliance.[9]

LOLLIPOPS

A small, medicated candy intended to be dissolved slowly in the mouth to lubricant and so that irritated tissues of the throat. A small flavored tablet made sugar (or) syrup and often medicated. A Small medicinal tablet originally in the shape of lollipops, taken for sore throat and dissolved in the mouth. Lollipops are large sugar boiled confectionary of various flavors attached to a plastic stick which can be consumed over a long period of time through licking. The plastic stick is used to hold the confection together. Lollipops are the dosage forms that

dissolve slowly in the mouth (or) that can be easily swallowed are gaining in popularity, especially among pediatric patients. Lollipops are solid unit dosage form of medicament which is meant to be dissolved in mouth (or) pharynx. Development of lollipops dates back to 20 thcentury and is still in commercial production.[10]

TYPES OF LOLLIPOPS



HARD LOLLIPOPS

Hard lollipops might be considered solid syrups of sugars. These dosage forms are made by heating sugars and other ingredients together and then pouring the mixture into a mold. Hard lollipops are similar to hard candy. In fact, many hard lollipops formulas are modifications of hard candy formulas. The dosage form needs low moisture content. So water is evaporated off by boiling the sugar mixture during the compound process. Hard candy lollipops are mixtures of sugar and other carbohydrates in an amorphous (noncrystalline) (or) glassy condition. These lollipops can be considered solid syrups of sugars and usually have a moisture content of 0.5%-1.5%. Hard lollipops should not disintegrate but instead provide a slow, uniform dissolution (or) erosion over 30 minutes.

SOFT LOLLIPOPS

Soft lollipops have become popular because of ease with they can be extemporaneously prepared and their applicability to a wide variety of drugs. The base usually consists of a mixture of various PEGs, acacia (or) similar materials glycerol gelatin (or) an acacia: sucrose base. These lollipops may be coloured and flavored and they can be either slowly dissolved in the mouth (or) chewed, depending on the intended effect of the incorporated drug.

Example; chocolate lollipops

Chocolate that has been medicated is created from the dried, fermented seeds of the cocoa tree, or theo broma cacao. The scientific term theobroma translates to "food of the goods"

from the Greek words Theos, which means "god," and broma, which means "food." Chocolate is a food preparation made primarily of cocoa, roasted and crushed nuts, and generally brown sugar. It can be produced as a liquid, paste, or block, or it can be used to flavor other dishes. Cocoa butter and cocoa solids might have different qualities when they are present in chocolate. Flavonoids can be found in cocoa solids. Aside from theobromine, phenethylamine, and caffeine, anandamide is also found in chocolate.[11]

They have been consumed by humans since at least around 500 AD. Dark chocolate is one such food that historically used for healing purposes. The chocolate consumption ranges from 120g per person per year in china to around 12000g per person per year in Iceland. The use is in the middle of this range, with consumption of approximately 500g per person per year.[9] Chocolate is highly advanced and much infinitely adaptable food that can be combined to create completely different taste. Chocolate is an anhydrous medium resistance to microbial growth and hydrolysis for water sensitive active agent.[12]

There are several type of chocolate according to the proportion of cocoa used in particular formulation like dark chocolate, milk chocolate, cocoa powder or bittersweet chocolate.[13]

ADVANTAGES OF MEDICATED LOLLIPOPS

1. Having formulas that are easy to change and can be patient specific.
2. Keeping the drugs in contact with the oral cavity for an extended period of time.
3. It has a pleasant taste and it extends the time that a quantity of drug remains in the oral cavity to elicit a therapeutic effect also, pharmacist can prepare lollipops extemporaneously with minimal equipment and time.
4. Lollipops can be given to those patients who have difficulty in swallowing.
5. It extends the time of drug in the oral cavity to elicit a specific effect.
6. Easy to prepare with minimum amount of equipment and time
7. Do not require water intake for administration. Technique is non-invasive, as is the case with parenteral.

DISADVANTAGES OF MEDICATED LOLLIPOPS

1. Heat labile drugs cannot be used in this formulation because of the high temperatures required for preparation.
2. Drugs having minimum bitter taste are suitable.
3. Heat stable drugs are suitable.

4. One important drawback of such dosage forms is ‘Dysphasia’ or difficulty in swallowing. This is seen to afflict nearly 35% of the general population. This disorder is also associated with a number of conditions like: parkinsonism, motion sickness, unconsciousness, elderly patients, children, unavailability of water.[17]

CONCLUSION

One of the more exciting new dosage forms is medicated lollipops, which, if manufactured correctly, will revolutionize the pharmaceutical industry by providing paediatric patients with a convenient and novel method of administering medication.

In addition to retaining excellent effectiveness and bioavailability—and, most critically, increasing patient compliance—such dose forms are well-received by parents and kids. In addition, it's a quick, simple, and economical operation. Put another way, medicated lollipops are the best possible dosage forms for kids because they come with a lot of extra benefits, like patient compliance, ease of use, and comfort for effective treatment, along with a low dose, quick onset of action, shorter dosage schedule, and cost-effectiveness. These will provide a more inventive and superior dose form**.**

The formulation of medicated lollipop is an easy and time saving process. The medicated lollipops can provided an attractive, alternative formulation in treatment of pain in paediatric patients. The oral route of drug administration patients compliance, ease of administration, and flexibility in formulation. Medicated lollipop is an ideal dosage forms. This will offer better innovative dosage form. Any enjoy an important position in pharmacy and will be remains at same in future.

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