APPARATUS AND METHOD FOR ADMINISTERING POWDERED MEDICATION

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ABSTRACT

A powdered medication packet with pre-measured amounts of powdered or granulated medication which is equivalent to the medication in a standard pill. The medication is dispensed by tearing open the packet and mixing the powder with a transfer medium, such as a beverage or other type of food. The pre-crushed and prepackaged medication eliminates the need to crush conventional medicine pills at the time of use. When used in conjunction with beverages, the pre-crushed medication may be mixed directly with any beverage prior to drinking, poured into a prior art medication delivery straw, or mixed with food. When the patient drinks the beverage, eats the food, or drinks through the straw, the medication is ingested by the patient. Alternatively, the packets may have multiple compartments which hold each hold discrete doses of a given medicine.
APPARATUS AND METHOD FOR ADMINISTERING POWDERED MEDICATION

Cross-Reference to Related Applications

[0001] This application is related to, and claims the benefit of, the provisional patent application entitled “Apparatus and Method for Administering Powdered Medication”, filed Mar. 26, 2004, bearing U.S. Ser. No. 60/521,291 and naming John C. Smith, the named inventor herein, as sole inventor, the contents of which is specifically incorporated by reference herein in its entirety.

BACKGROUND OF INVENTION

[0002] 1. Technical Field
[0003] The present invention relates to medication delivery devices. In particular, it relates to devices useful for delivering oral doses of powdered medication to patients.
[0004] 2. Background Art

[0005] Today, many medications are taken by individuals in pill form. These medications may be prescription drugs, or commonly used over-the-counter drugs such as aspirin. While most individuals do not have any difficulty swallowing pills, there are a great many individuals who have difficulty swallowing for a variety of reasons. As a result, taking medication can be made more difficult due to the difficulty involved in swallowing pills. When an individual with a swallowing problem attempts to take a pill without assistance, they are subject to personal discomfort and inconvenience. However, in a professional setting, such as a hospital, patients often require the assistance of medical staff when taking oral medication. This assistance imposes a manpower burden on the medical staff, and affects its overall efficiency. The more difficult it is for the patient to swallow a pill, the more time the medical professional may have to spend with the patient for this purpose. It would be desirable to have a method of administering oral medication which minimizes any inconvenience and discomfort to patients when they are taking pills by themselves, and simultaneously improves the efficiency of medical staff when they are required to assist the patient in taking medication.

[0006] In regard to a professional setting such as a hospital, a significant portion of a nurse’s time is consumed by the process of administering medication to patients. For relatively able patients, all that may be required is the delivery of a pill and a glass of water. However, even for this simple task, the time required to administer medication to an entire hospital ward is significant. In the case where a patient requires assistance from the nurse, the amount of time required to administer a pill to patient may be multiplied several times over. This leads to decreased efficiency for the nurse and higher costs to the hospital for delivering healthcare.

[0007] While liquid medications can be difficult to administer, dry medications present special problems. This is due to the fact that dry medication is not administered alone. In the case where a patient cannot swallow a pill, water or some other beverage typically must be supplied to assist the patient to swallow. In the case where patients have substantial difficulty swallowing, administering the medication is substantially more difficult and time-consuming. Typically, the nurse first crushes the pill into a powder. This usually requires that the nurse carry a mortar and pestle or other crushing device. Crushing the pill into the proper granular consistency takes unnecessary time and adds to the cost of administering the medication. Once the pill is crushed, it must then be mixed with a liquid, such as water or fruit juice, prior to administering it. On occasion, the nurse may mix the crushed medication with a non-liquid, such as applesauce. In this situation, even more time is taken to administer the medication. These various methods assisting people who cannot swallow injects additional time delays, raises questions related to the accuracy of dosage due to material loss during the crushing process, and increases costs due to unnecessary expenditure of time.

[0008] This swallowing problem is associated with a wide variety of patients who are not able to easily and quickly take their medication. For example, small children, elderly, senile or Alzheimer’s patients, handicapped patients, and severely injured patients may all require more time to administer medication because of their inability to follow instructions or to physically take medication. As a result, delivery of medication to these categories of patients is difficult and time consuming.

[0009] Past attempts to orally administer medication to this category of patients has centered on mixing the medication with other types of edible items. For example, pills or powdered medications are often crushed and mixed with beverages or food, such as apple sauce. As discussed above, several problems are associated with this type of medication delivery. First of course is that this approach is very time consuming. The hospital may be faced with the situation where several nurses are needed to administer daily medication where only one would be needed if the medication could be delivered quickly. As a result, this can have a substantial effect on healthcare costs. Further, when the medicine is mixed with liquids or food items, the patient must drink all of the liquids, or eat all of the food to ensure that they have ingested all of the medication. In the case of handicapped patients, even when the nurse hand feeds the patient, food may be spilled from a patient’s mouth resulting in loss of medication. Likewise, the patient may decide not to eat any more food, in which case the nurse must then attempt to convince a confused or senile patient that the meal is not over. Due to the excessive amounts of time and the uncertainty of dosage amounts, this historic approach to medication delivery has been found wanting.

[0010] Another approach has been to design special purpose utensils designed to allow the nurse to administer medication orally. While this approach can reduce the amount of time required to administer medication, it has the drawback of requiring expensive special purpose utensils which are usually disposable. In addition, dry medication is usually mixed with a liquid in the utensil which requires extra time to prepare and extra care on the part of the nurse. Another disadvantage of using special purpose utensils is that the nurse is still required to crush the pills in order to deliver the medication. As a result, these devices do not save the nurse any time whatsoever in regard to the crushing process.

[0011] An example of such a prior art utensil are medication delivery straws. These special-purpose straws allow powdered medication to be placed in the straw. The patient places the straw in a fluid or beverage and the patient ingests
the beverage through the straw along with the medication. When the beverage flows through the straw, it dissolves powdered medication while the medication is still inside the straw. As a result, the patient is able to take the medication without noticing, or being inconvenienced by, its presence. However, there is a disadvantage in this type of straw medication delivery system in that the nurses are typically required to take pre-existing pills, manually crush them, and then manually insert the powder into the straw via a funnel or other means. The physical process required to convert a conventional pill into a powder, and then load the powder into the straw, and then assist the patient to drink through the straw can take substantial amounts of time. Further, the special-purpose straws are more expensive than a simple hollow straw, such as those used in a restaurant. It would be desirable to have a method of delivering powdered medication equivalent to the dosage found in a particular pill without having either the individual, or a health-care professional, have to invest excessive amounts of time and expense for the simple purpose of ingesting a specific medication. Of course it would be possible to provide straws which are preloaded with medication. However, this would require that each straw be non-reusable. As a result, time is saved but material costs are increased. It would be desirable to have a way to deliver powdered (i.e., crushed pill) medication, in the proper dosage amounts, with a minimum amount of nurse time, and with minimal material costs.

[0012] The prior art has failed to provide a dry medication delivery device which ensures proper dosage, is easy to use, and allows an individual to quickly and conveniently take oral medication without the discomfort and convenience of swallowing pills, in which further allows a healthcare professional to assist in the administration of medication to a patient in a more rapid fashion and without requiring expensive non-reusable devices to administer a pill substitute.

SUMMARY OF THE INVENTION

[0013] The present invention solves the foregoing problems by providing a crushed or powdered medication storage packet which contains dry medication. The packet contains a predetermined amount of pre-crushed medication which is equivalent to the medication in the standard size pill for that medication. The medication is dispensed by tearing the top edge off of the packet and mixing the powder with a transfer medium, such as a beverage or other type of food. The pre-crushed and prepackaged medication eliminates the need to crush conventional medicine pills at the time of use. When used in conjunction with beverages, the pre-crushed medication may be mixed directly with the beverage prior to drinking of the patient, or poured into a special-purpose straw. When the patient drinks the beverage, or drinks through the straw, the medication is dissolved and ingested by the patient. An alternative embodiment uses multiple compartment packets which hold multiple doses of a given medicine. When the pre-crushed medication is used in conjunction with foods, the medication packet is torn open and its contents emptied into, and mixed with, the food.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 illustrates a preferred embodiment of the powdered medicine packet.

[0015] FIG. 2 shows the powdered medicine packet with the end removed to release the contents.

[0016] FIG. 3 illustrates the packet being poured into a cup containing a beverage for the purpose of dissolving the medicine from the packet.

[0017] FIG. 4 illustrates an alternative embodiment of the packet which shows two separate storage compartments, each holding a uniform dose of a particular drug.

[0018] FIG. 5A illustrates a prior art pill grinder during the process of grinding a pill and pouring the ground powder into a spoon.

[0019] FIG. 5B illustrates the prior art technique of pouring the ground powder in the spoon into a funnel to load a medication straw.

[0020] FIG. 6 illustrates an open packet containing powdered medication being used to fill a medication delivery straw.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] Prior to a detailed discussion of the drawings, a general discussion of the features and advantages of the invention follows.

[0022] The invention provides a method and apparatus for delivering powdered medications with highly accurate pre-measured doses, and which also provides medication in powdered, pre-crushed or granulated form to eliminate the necessity for crushing pills for individuals who cannot swallow pills. The medication delivery system provided by this invention provides convenience for an individual, and increases the productivity for medical professionals by eliminating the time required to crush pills, the time required to clean pill crushers, and by ensuring that dosages are more accurate. As a result, medications can be delivered to patients faster, more conveniently, and in more accurate doses than has previously been possible using the prior art.

[0023] The first medications storage packet (hereinafter, the “packet”) provided herein eliminates the inconvenience associated with crushing pills for the purpose of administering medication to individuals who may have difficulty swallowing pills. The packets are designed to contain pre-measured doses of medication. The medication in the packet is pre-crushed to an appropriate granularity such that it will easily dissolve when the packet is opened and the contents are poured into a beverage. Likewise, the powder is ground so that it can be suitably mixed with semi-solid foods such as applesauce, yogurt, etc.

[0024] The packets are intended to be used for all suitable types of medications, including over-the-counter drugs, and prescription drugs. In individual can use the packets without assistance by medical professional by mixing the powdered medication with a beverage, or with food. For individuals who have difficulty swallowing pills, this avoids the inconvenience and discomfort of having to swallow the pill. This is even more important for individuals who simply cannot swallow pills. In the situation where the pills are being administered by a health-care professional such as a nurse, the invention improves the nurses efficiency by allowing the nurse to quickly and inexpensively administer powdered medications to patients without having to go through the process of crushing a pill and then either mixing the crushed pill with a beverage or with food, or alternatively, loading the crushed medication into a medication delivery straw.

[0025] While the crushed medication still has to be mixed with the beverage or food, or loaded into a medication
delivery straw, the invention eliminates the entire process of crushing the pill. This substantially reduces the amount of time required to prepare medication for a patient. In addition, it also reduces the chance for accidental spillage during the crushing process which may result in improper dosages being administered. Of course, it also eliminates the need for the nurse or other healthcare professional to clean whatever devices are used to crush the pill.

[0026] In the preferred embodiment, the packet is disposable. Depending on the type of medication used, the packet can be a simple paper package such as that used to deliver sugar or sweeteners in a restaurant environment. Likewise, in the case where the medication in the packet may be harmed by light or moisture, the packet can be fabricated from any suitable material which will protect the medication. For example, commercially available packets are used for up the restaurant industry for food condiments such as ketchup and mustard. Of course, depending on the type of medication in question, any other suitable material can be used to manufacture the packet. As a result, the packet can be used to hold, and powdered form, any type of medication which is normally delivered via a pill. The individual or medical professional needs only to tear open the packet and pour the pre-measured part of medication into the beverage or mix the powdered medication with a food product for ingestion by the patient.

[0027] An advantage provided by the packet is that it ensures that the medication is ground to the proper consistency prior to use, because it is ground in a factory setting under controlled conditions. It avoids the situation where medication may be ground to finely or not finely enough. Another significant advantage of the packet is that it reduces labor costs for healthcare professionals by eliminating the time required for them to crush pills, thereby reducing the amount of time required to administer the medication. Of course, since the medication has been pre-ground, there is no grinding device which needs to be cleaned after each use. An advantage is also provided to the patient or individual when taking medications without assistance, in that it eliminates the need for them to crush a pill prior to taking medication. This ensures that medication is not inadvertently lost or discarded, and ensures that the medication is delivered in the proper granularity.

[0028] In the preferred embodiment, the packet is a paper envelope similar to those used to store sugar, sweeteners, salt, pepper, etc., in restaurants. Of course, the outside of the packet should be clearly marked as to the type of medicine and to the dosage amount. For example, in addition to typing the name and dosage amount of the medication inside the packet, the packets can also be color-coded to help avoid the situation where in individual accidentally selects the wrong medicine packet. This is consistent with the manner in which solid pills are uniquely colored and shaped. In light of the fact that some medications use chemical compounds which are sensitive to moisture and/or light, the packet can be fabricated from material which is impermeable to water and/or light, such as the type of condiment packages for ketchup or mustard which were discussed above. Those skilled in the art will recognize that while the simplest form of fabrication uses a single layer of material, the packet can also be fabricated such that it is a multilayer material which includes at least one layer that is designed to seal the contents of the packet such that its contents are protected from environmental factors such as moisture and/or light.

[0029] Having discussed the features and advantages of the invention in general, we turn now to a more detailed discussion of the figures.

[0030] FIG. 1 illustrates a preferred embodiment of the powdered medicine packet. It is constructed with opposing external surfaces which are sealed together around the periphery and form an inner storage compartment which is defined by dashed line. Also shown in this figure is powdered medicine which occupies a portion of inner storage compartment. In the preferred embodiment, the powdered medicine in each inner storage compartment will have a predetermined amount of medicine which is equivalent in dosage to a corresponding pill. As a result, when the medical professional is administering medicine to patients, a doctor’s orders indicating that a pill having a particular dosage should be administered, the nurse can take either an actual pill, or a powdered medicine packet having an equivalent dosage. The medical professional only needs to determine whether the patient has the ability to swallow. These powdered medicine packets can be fabricated using pre-existing machines which are today used to fabricate packages of commercially available sweeteners and/or condiments for restaurants. The manufacturing process only requires that individual doses of medication are carefully ground into a powder having a predetermined granularity, then inserting the doses of medication into the powdered medicine packets prior to sealing.

[0031] Once this process is complete, the powdered medicine packets can then be used by both medical professionals, as well as lay individuals, with confidence. The individual using the powdered medicine packets will have the confidence of knowing that the correct dosage is in the powdered medicine packet, and that the medication in powdered medicine packet has been ground to the correct consistency. The medical professional, and the institution that professional works for, will have all of the preceding benefits plus the benefits of increased efficiency and profit.

[0032] FIG. 2 illustrates packet 1 with the end portion removed. In the preferred embodiment, the powdered medicine packet is fabricated from any suitable materials which the user is able to tear open to allow the contents to be poured out. As noted above, a variety of commercially available materials, such as paper, metal foil, polyethylene, polypropylene, plastic, etc., can be used to fabricate the powdered medicine packet. For any particular medicine, material selected should be suitable for that medicine in terms of environmental factors such as humidity, sunlight, etc.

[0033] FIG. 3 illustrates the powdered medication in the powdered medicine packet being poured into a cup containing a beverage for the purpose of dissolving the powdered medication from the powdered medicine packet. Any suitable beverage can be used. Once the powdered medication is dissolved, the beverage can be ingested. As discussed above, the powdered medication can be combined with a beverage, or alternatively, mixed with food. As can be seen, the packet structure used herein eliminates the need to use a grinder, or other crushing device, for the purpose of preparing medication for ingestion without taking a pill. This will save both the individual, and the medical care professional, a significant amount of time when preparing administration of medicine for someone who can swallow.

[0034] FIG. 4 illustrates an alternative embodiment of the powdered medicine packet which shows two separate
inner storage compartments 5, each holding a uniform dose of a particular drug. The inner storage compartments 5 are separated by a seal line 7. Quite often, when a particular medication is taken, multiple pills are used. However, there are medication times when only a single pill is needed. For example, when taking a common medication such as an aspirin, individuals may take one pill or two. In this preferred embodiment, each inner storage compartment 5 is intended to hold equal doses of medication. For example, each inner storage compartment 5 may hold the equivalent of a single pill of aspirin and a specific dosage level. Preferably, the dosage in each inner storage compartment 5 will equal the dosage in a single pill. As a result, the equivalent of two pills will be available in a single powdered medicine packet 1, but since they are separated into separate inner storage compartments 5, the user can select the appropriate dosage for that time and place. The powdered medicine packet 1 can be saved with the powdered medication 4 still stored in the unopened storage compartment 5 for later use.

0035] FIG. 5A illustrates a prior art pill grinder 11 during the process of grinding a pill into powdered medication 4 and pouring the powdered medication 4 into a spoon 13. Pill grinders 11 can be powered machines, or as illustrated here, a manual pill grinder 11 which is operated by a hand crank 12. A disadvantage that is associated with conventional prior art pill grinders 11 is that they must be cleaned between uses. If not, multiple medications may be delivered to the wrong patient as well as incorrect doses. Of course, there is a substantial inefficiency involved with having the medical professional spend time cleaning the pill grinder 11 between uses. The advantage provided by the invention is that the need for the pill grinder 11 is totally eliminated. This saves all of the time associated with the grinding process, as well as the time associated with cleaning the pill grinder 11 between uses.

0036] FIG. 5B illustrates another prior art technique used to deliver the medication once it has been ground into a powder by pill grinder 11. Using this method, the user pours the powdered medication 4 in the spoon 11 into a funnel 10 to load it into medication delivery straw 9. These prior art medication delivery straws 9 typically have purge valves (not shown) or other retaining devices in the distal end of the medication delivery straw 9 to prevent the powdered medication 4 from falling out of the bottom of the medication delivery straw 9. Once the medication delivery straw 9 is loaded with the powdered medication 4, the patient or medical care professional places the straw into a beverage and the patient drinks the beverage through the medication delivery straw 9. On the beverage enters the medication delivery straw 9, the powdered medication 4 is immediately dissolved. As a result, the patient ingested medication but is not required to swallow a pill. Another benefit provided by the medication delivery straw 9 is that the entire beverage typically does not have to be drunk for the patient to ingest the entire dosage of medicine.

0037] FIG. 6 illustrates a powdered medicine packet 1 containing powdered medication 4 being used to fill a medication delivery straw 9. As can be seen, the invention eliminates a substantial amount of work that was illustrated above in regard to the discussion of the prior art in FIGS. 5A-B.

0038] Those skilled in the art will recognize that while this figure illustrates the powdered medication 4 being loaded into a medicine delivery straw 9, the powdered medication 4 can just as easily be poured directly into food, such as applesauce, and then mixed and fed to patient. As was the case in regard to the medicine delivery straw 9, the powdered medicine packet 1 eliminates the time required to grind the medication, and the time required to clean the pill grinder 11.

0039] For ease of illustration, the foregoing discussion has focused on the use of the powdered medicine packet 1 in conjunction with beverages and/or food such as applesauce. Those skilled in the art will recognize that the powdered medicine packet 1 can be used in combination with any ingestible material, such as soup, cold or warm cereal, oatmeal, grits, yogurt, ice cream, or any other foodstuff which lends itself to mixing with powdered medication. Likewise, the discussion has focused on the use of the powdered medicine packet 1 with medical professionals such as nurses and doctors. However, the powdered medicine packet 1 can be used by anyone, even laymen. Those skilled in the arts will also recognize that the powdered medicine packet 1 can be used not only in hospitals, but also in doctor’s offices, nursing homes, daycare centers, schools and private residences. In addition, it is particularly convenient for individuals who are traveling and those who wish to take medication of some sort in hotels. Further, the powdered medicine packet 1 is not limited to applications involving humans. They can just as easily be used for a variety of veterinary purposes with the same advantages. For example, many domestic animals, such as dogs and cats, spit out pills. By having the pills in powdered form, the medicine can be mixed with an animal’s food so that they ingest needed medication without protest.

0040] While the invention has been described with respect to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in detail may be made therein without departing from the spirit, scope, and teaching of the invention. For example, any suitable material can be used to fabricate the powdered medicine packet 1. Any type of medication which was suitable for use in pill form, can be used by this invention as powdered medication 4. Accordingly, the invention disclosed herein is to be limited only as specified in the following claims. I claim:

What is claimed is:

1. A crushed or powdered medicine storage packet, comprising:

   at least two opposing outer surfaces, secured together at their peripheral edges and defining at least one inner storage compartment, further, the packet is fabricated from material suitable for tearing open to release the contents of the packet; and

   a predetermined amount of crushed or powdered medication, the predetermined amount of crushed or powdered medication approximately equaling the dosage of a pill containing the same medication, and further, the crushed or powdered medications stored within an inner storage compartment.

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