



Chapter 17

Dry Powders, Capsules, and Lozenges

OBJECTIVES

After completing this chapter, the student will be able to:

- Describe the topical effect of chemicals used in dry powder formulations.
- Discuss the reasons for triturating topical dry powders into fine, evenly mixed particles.
- Describe the use of a fine mesh sieve to obtain evenly sized particles.
- List the advantages of using capsules as a compounded dosage form.
- Demonstrate the punch method of making capsules.
- Compare the punch method with the use of a capsule machine.
- Describe three ways to make lozenges as a dosage form.

KEY TERMS

- anesthetic
- antibacterial
- antifungal
- antipruritic
- capsule body
- capsule lid
- comminution
- demulcent
- dispersion
- eutectic mixture
- geometric dilution
- levigating agent
- mesh sieve
- mucilage
- protectant
- spatulation
- trituration
- tumbling

antifungal Agent used to treat fungal infections.

antibacterial Agent used to inhibit the growth of bacteria.

antipruritic A drug or chemical that reduces itching.

There are many dermatologic conditions that can benefit from the application of a dry powder formulation. The addition of an active ingredient, such as an **antifungal**, **antibacterial**, or **antipruritic** agent, to a finely divided powder formulation can provide a soothing and effective topical treatment for a number of skin conditions. Bulk powders can also be administered internally to dose antacids, bulk laxatives, and antidiarrhea medications. Compounded capsule formulations can facilitate the administration of oral medications by providing an accurate dose of more than one medication and eliminating the problems involved with taking unpalatable medications. Compounded lozenge formulations can incorporate specific medications for a patient and provide a palatable dosage form with both topical and systemic effects. This chapter will discuss compounding issues and preparation methods for these types of solid dosage forms.

Bulk Powders for External Use

Topical powders may contain one or more active ingredients and often use starch or talc as the diluent to provide a smooth, soft product that will be soothing to irritated skin. The particles in the solid ingredients must be reduced to a very small size. If one or more of the ingredients might form a **eutectic mixture**, the compounder must either force the mixture to liquefy before adding the remaining dry ingredients or add a **protectant**, such as starch, to each of the possible eutectic formers to prevent clumping when the mixture is complete.

eutectic mixture Two or more chemicals that change from a solid form to a liquid when mixed together.

protectant An agent, such as starch or talc, that is added to ingredients that may form a eutectic mixture if triturated together (prevents two or more chemicals from reacting when mixed).

comminution The process of reducing particle size.

trituration The process of reducing particle size using a mortar and pestle.

levigating agent A substance added to slightly wet powdered ingredients.

spatulation The process of mixing an ointment on an ointment slab with a spatula to ensure uniformity of particles.

mesh sieve Sieve that has a number of small holes to allow a certain size of powders to pass through.

Particle Size Reduction

Because most chemicals cannot be purchased in the finely ground form needed for compounding powders, the compounder must use a number of procedures and equipment to reduce the particle size, in a process known as **comminution**. The most common method is **trituration**, which involves placing the solid in a mortar and continually grinding the chemical between the mortar and the pestle using a firm, downward pressure. The powder must be frequently scraped from the sides of the mortar to ensure that all particles are evenly reduced and mixed. A **levigating agent**, such as glycerin, may be added to the solid and processed by either continued trituration or by placing the mixture on an ointment slab and using **spatulation** to wet the solid and further reduce the particle size. A small **mesh sieve** can be used to determine the prevalent particle size of a powder after it has been triturated. Standard U.S. sieves are numbered according to the number of openings per linear inch; the larger the mesh number, the smaller the particles that will pass through it. See Figure 17.1 for a picture of a mesh sieve.

Preparing a Homogenous Mixture

Some of the same processes used to reduce particle size are also used to mix solid particles into a homogenous mixture. Powders that have been blended with a protectant to prevent the formation of a eutectic mixture must be mixed carefully with little to no pressure. Spatulation, or the mixing of particles with a spatula on an ointment slab, will result in a light, well-mixed powder without interfering with the protectant. Trituration serves the dual purpose of reducing particle size and mixing powders. It is especially effective for mixing small quantities of potent



Figure 17.1 Mesh sieve used to determine particle size when compounding dry powders for topical use.

drugs with larger amounts of diluent. Hazardous substances can be effectively mixed by a process called **tumbling**. The powders are sealed in zipper-sealed bags or clear bottles with a lid and tumbled until they are well mixed. The addition of a coloring agent can assist in determining when the mixture is homogenous. When the powders being combined are unequal in quantity, **geometric dilution** is the preferred method for mixing them. Begin by placing the powder with the smallest quantity in the mortar and adding an equal amount of each of the other powders. Continue adding each powder in an amount that is equal to the powder in the mortar and triturate well after each addition to form a homogenous mixture. To mix powders of equal volumes, add small, equal amounts of each powder and mix well after each addition. Equal dispersion of each ingredient is important to provide the proper therapeutic effect.

tumbling Mixing powders by placing them in a plastic bag or large jar and rotating it until mixing is completed.

geometric dilution The process of mixing two solid chemicals together by taking equal parts of each in small amounts, mixing them thoroughly, and continuing to add small, equal parts of each until both are thoroughly mixed.

Packaging Dry Powders

Bulk powders for external use (sometimes called dusting powders) are often dispensed in a shaker-top container to facilitate topical application. They may also be dispensed in a wide-mouth jar or a plastic container with a flip-top lid. The jar or plastic container can be closed tightly and provides increased stability and protection from light and moisture, especially for compounds that contain volatile ingredients.

Bulk powders intended for internal use should be dispensed in an amber, wide-mouth powder jar with a tight-fitting lid. They should be accompanied by an appropriately sized dosing spoon or cup and adequate directions for removing and administering a correct dose. Internal bulk powders should be labeled with the concentration of the active ingredient per dose (e.g., potassium chloride 600 mg per tablespoonful).

Divided dry powders are packaged in individual doses and dispensed in either folded papers or plastic bags. If the individual dose of the compound is below the minimum weighable quantity of the prescription balance being used, or is so small in mass that it will be difficult for the patient to handle, a diluent should be added to make the dose more manageable. This can be accomplished by preparing an aliquot to attain the proper concentration. Folded powder papers are very time-consuming and rarely used. Plastic bags that either have a zipper closure or can be heat-sealed are more frequently used to package individual doses of dry powders for internal use. Amber bags are available for products that are light-sensitive, and the filled bags can be dispensed in a light-resistant container. Dry powder dosage forms can be a convenient means of administering a capsule or tablet to a patient who has difficulty swallowing. The capsule contents can be emptied into a small plastic bag or the tablet can be crushed and placed in a small bag.

Preparation Method 17.1

Dry Powders

James Anderson, MD 2901 Church Street, Brooks, IN 47604 Phone: (356) 443-0098 Fax: (356) 444-9800	
Name: <u>Sammy Smitz</u>	Date: <u>05-03-07</u>
Address: <u>2603 South Hampshire Road, Brooks, IN 53706</u>	
RX: <i>Menthol .1 gram</i> <i>Salicylic Acid .1 gram</i> <i>Starch 95 AD 30 grams</i> <i>SIG: Apply to callous on bottom of feet daily</i>	
Refills <u>3</u>	
_____ Dispense as written	<i>James Anderson, MD</i> _____ May substitute

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1. Weigh the camphor, salicylic acid, and 29.8 g of starch.
2. Camphor and salicylic acid will form a eutectic mixture, so place them in a glass mortar and triturate them together until they liquefy.
3. Place the starch in a Wedgwood mortar and triturate it by applying downward pressure in a circular motion with the pestle to reduce the particle size. Periodically scrape the powder from the sides of the mortar and continue to triturate until the particles are a fine, even size and any clumps have been removed.
4. Place an amount of starch approximately equal to the amount of liquefied eutectic mixture into the glass mortar and allow the starch to adsorb the liquid.

5. Using geometric dilution, continue adding an amount of starch equal to the amount of mixture in the glass mortar, triturating after each addition, until all the starch has been added and the mixture is blended into a fine homogenous powder.
6. Run the powder through a mesh sieve and triturate again, if necessary, to achieve an appropriate particle size.
7. Place the powder in a shaker-top container and apply the prescription label and any auxiliary labels.
8. Place the ingredients used, the paperwork, the master formula sheet (including any calculations used), and the final labeled product in the checking area for the final check by the pharmacist.



Capsules as an Extemporaneous Compound

A capsule is a solid dosage form in which the active ingredients and diluents are contained in a two-piece hard shell, usually made of gelatin. Gelatin capsules are available in various sizes and colors. See Figure 17.2 for capsule sizes. The double-zero size is the largest size for oral use in humans, although the zero size is more commonly used. The zero-size capsule has a capacity of 0.5 to 0.8 grams of powder depending on the density of the chemical being used. Hard-shell capsules consist of two pieces: the body and the cap (see Fig. 17.3). After the two pieces are separated, the body piece is filled with the dry powder ingredients and the cap is then replaced. The smallest capsule that will hold the ingredients should be chosen for the compound. When several ingredients are being inserted into the capsule, a powder that is near the average weight of all the ingredients should be chosen to determine the capsule size that will best accommodate the ingredients in a slightly packed form. Reference books can be used to find the approximate capsule capacities for some common chemicals. If the amount of drug needed for a single dose is below the minimum weighable quantity, a diluent should be added. If the single dose is too large for a capsule that can reasonably be swallowed by the patient, a diluent should be added and the dose divided into two capsules.

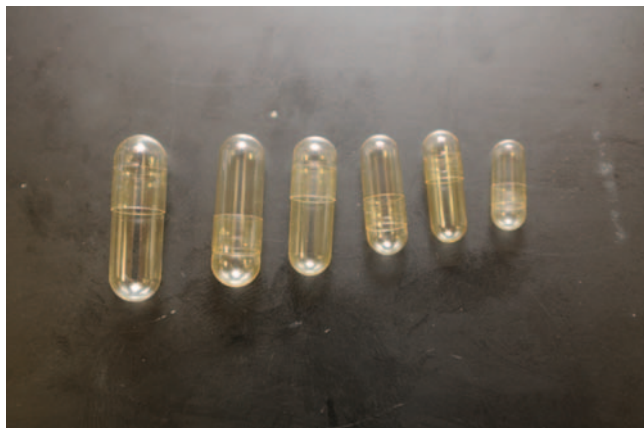


Figure 17.2 Capsule size 00 is the largest capsule used for human oral preparations, and size 5 is the smallest.

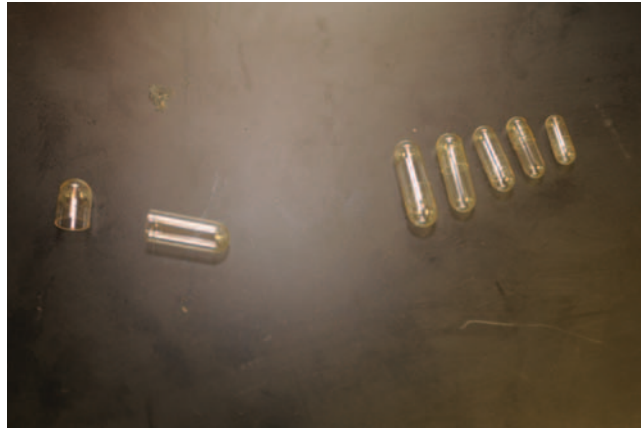


Figure 17.3 The cap of the capsule fits snugly over the body of the capsule after the capsules are filled.



See the student CD and website for a video of this procedure.

Preparation Method 17.2 Hand-Filling Capsules

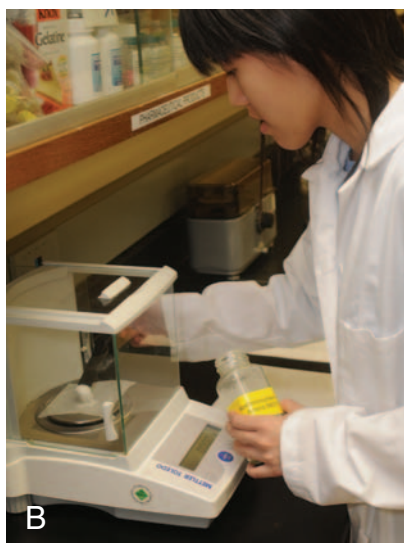
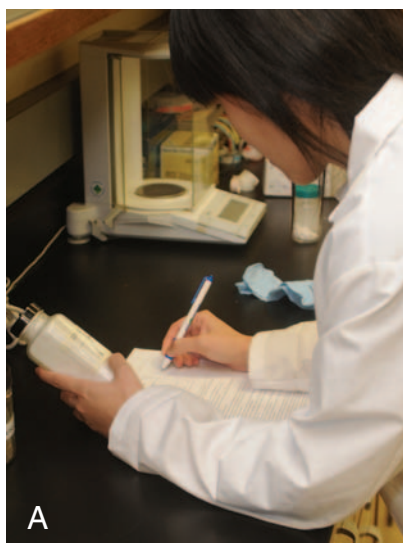
Michael Angelo, D.O. 806 Cherry Creek Plaza, Denver, CO 50620 702-317-5030	
Name: <u>Sally Sue Sullivan</u>	Date: <u>10/19/06</u>
Address: <u>6072 Denver West Dr., Boulder, CO</u>	
RX: <i>Acetaminophen 325mg</i> <i>Ibuprofen 100mg</i> <i>mix and prepare 12 capsules</i>	
Sig: <i>Give one capsule qid for pain and fever</i>	
_____ Dispense as written	_____ <i>Michael Angelo, D.O.</i> May substitute

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1. Calculate the amount of each powder ingredient needed to compound the total number of capsules to be dispensed. Determine whether the single dose for each capsule will be above or below the minimum weighable quantity, and include a diluent if necessary. (See Fig. 17.4A.)
2. Add enough of each ingredient to make one or two extra capsules to account for any loss that may occur during the compounding process. (See Fig. 17.4B.)
3. Triturate each ingredient to reduce the particle size and add them together using the geometric dilution technique. (See Fig. 17.4C.)

4. When a homogenous mixture has been prepared, place the powder on an ointment slab or pad and form a rectangular block using a spatula. The height of the block should be slightly shorter than the length of the **capsule body** to facilitate filling the capsule using the punch method. At this point, the compounder should put on disposable gloves. Using bare hands can result in fingerprints on the finished capsule or a slight melting of the gelatin capsule, and is not considered sanitary. (See Fig. 17.4D.)
5. Prepare the balance by placing a weighing paper on each side of a properly leveled balance and adding an empty capsule and the correct amount of weight to the right-hand pan of the balance. (See Fig. 17.4E.)
6. Remove the cap from one of the capsules to be filled and begin punching the body of the shell repeatedly into the block of powder until the capsule feels full or begins to offer resistance. (See Fig. 17.4F.)
7. Replace the cap on the capsule and place it on the left pan of the balance. Add or remove powder from the capsule according to whether the index pointer is to the left or right of the center. Continue until the pointer moves an equal distance from the left and the right of the center. Repeat this process for each capsule until all are filled. As you progress, you will begin to get a feel for how many times you should punch the capsule and how much resistance should be felt from the powder as the capsule body is filled. The margin of error for each capsule should be no more than $\pm 5\%$. (See Fig. 17.4G.)
8. If you are using an electronic balance to weigh the capsules, place an empty capsule shell in a weighing boat on the balance pan. Press the tare button to zero the balance with the weight of the capsule and the weighing boat. Remove the empty capsule and place each completed capsule in the weighing boat to determine the weight of the powder in the capsule. (See Fig. 17.4H.)
9. When all capsules are completed and the weights are acceptable, use a soft tissue to remove any particles of powder and place the capsules in a prescription vial for dispensing. Prepare the prescription label and any auxiliary labels, document the compounding procedure and calculations on a master formula sheet, and place the finished product in the checking area for the final check by the pharmacist. (See Fig. 17.4I.)

capsule body The bottom part of the capsule shell that contains the solid ingredients.



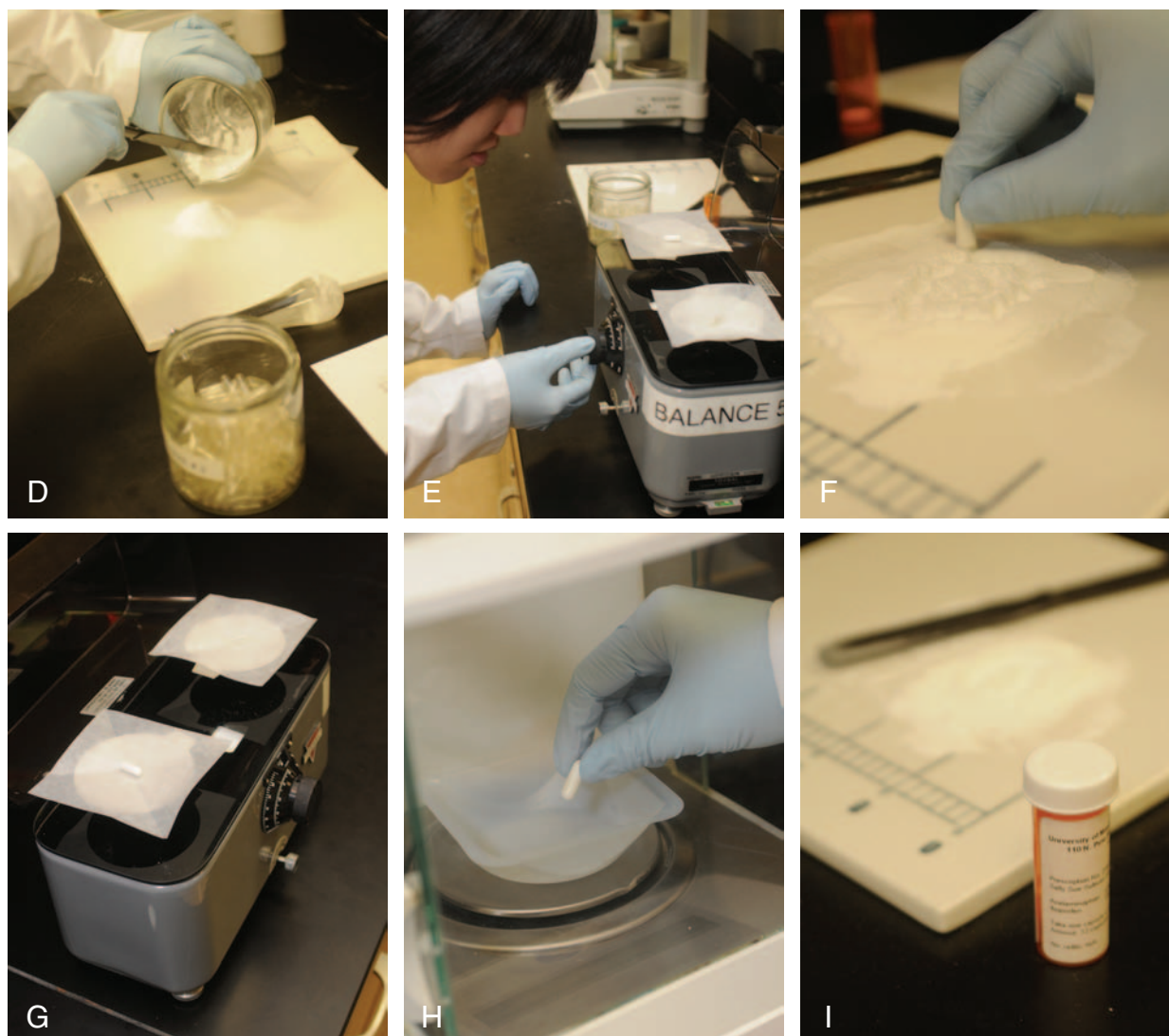


Figure 17.4 Steps for hand-filling capsules.



See the student CD and website for a video of this procedure.

Preparation Method 17.3 Using a Capsule-Filling Machine

A pharmacy in which capsules are frequently compounded may invest in a capsule-filling machine. Although automated capsule-filling machines are quite expensive, it is possible to purchase a non-automated machine for \$20 and up depending on the type of machine. Follow the instructions below using the punch method for capsules.

1. Using a non-automated capsule-filling machine (See Fig. 17.5A), place the bodies of the capsules into the holes of the machine (See Fig. 17.5B.)

2. Pour the prepared powder ingredients over the top of the capsules and use a special spatula to direct the powder into the capsules. A tamper is provided with the machine to press the powder into the capsules compactly (See Fig. 17.5C.)
3. When each capsule has been filled, lower the platform of the capsule machine so that the **capsule lid** can be applied. These machines can usually accommodate 100 capsules at a time and are most efficient when used to compound the full quantity of 100 capsules. (See Fig. 17.5D.)
4. After applying the capsule lids, randomly select 10 completed capsules for weighing and document the weight for quality control. If all 10 capsules are within the range of 85% to 115% of the labeled amount of the drug per capsule, the capsules are considered to be satisfactory. (See Fig. 17.5E.)

capsule lid The top part of a two-piece gelatin capsule that fits over the capsule body.

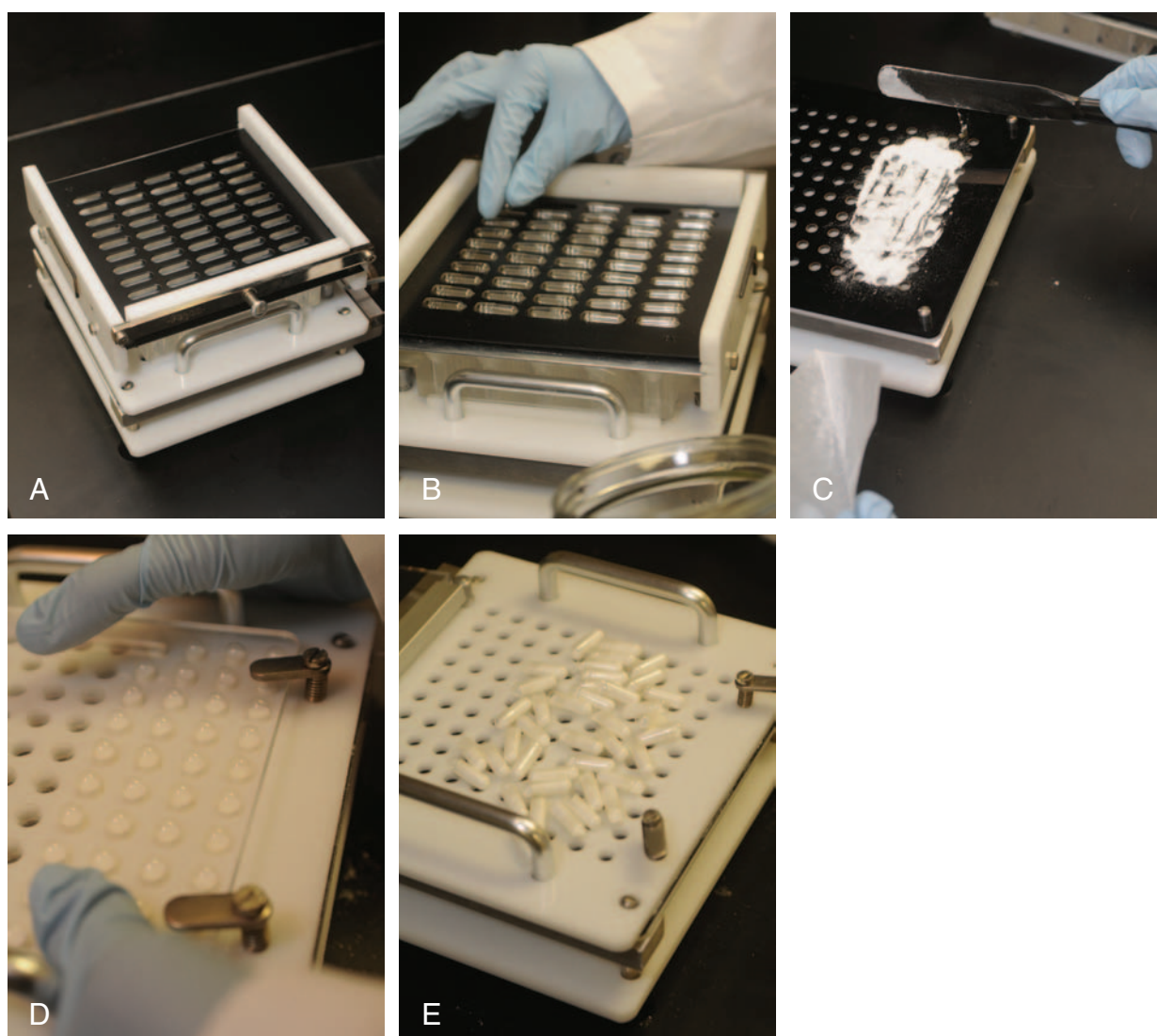


Figure 17.5 Steps for using a capsule-filling machine.



Advantages of Capsule Formulations

Capsules are a convenient dosage form in which an individual dose can be accurately measured. They are easily packaged and transported, and can be easily administered to the patient. Compounded capsules can be filled with a precise dose for a specific patient that may not be available commercially or may be available only in another form. They can contain ingredients that may be unpalatable or toxic to the touch. Two or more active ingredients can be combined into a single capsule dosage form, improving patient compliance. One or more commercially manufactured tablets can be inserted into a capsule with the addition of a diluent, such as lactose, to facilitate dosing. Capsules can be compounded easily in the pharmacy and offer many advantages to patients.

Compounded Lozenges

Lozenges are solid dosage forms that are intended to be dissolved slowly in the mouth. They contain one or more active ingredients and are flavored and sweetened so as to be pleasant tasting. They are generally used for their topical effect, but may also have ingredients that produce a systemic effect. A lozenge may contain an anesthetic, a demulcent, or an antiseptic. The fact that lozenges dissolve slowly in the mouth enhances the topical effect because the medication will be in contact with the mouth and throat tissues for a longer period of time. The drug may also be absorbed in the mouth or swallowed for a systemic effect. Lozenges provide a pleasant dosage form for patients who are unable to swallow other types of solid dosage forms. Because lozenges are formulated to taste good, they must be kept out of the reach of children, who may view them as candy.

Types of Lozenges

Hard Candy Lozenges

Hard candy lozenges are made of sugars and syrups with flavorings added, in much the same manner as candy is made. Recipes can be gathered from candy-making books, and molds, sticks, and wrappers can be obtained from stores that sell candy-making supplies. Just as when making hard candies, it is imperative to ensure that the temperature of the mixture reaches 149 to 154°C (called the hard crack stage). This makes hard candy lozenges unsuitable for drugs or chemicals that are unstable at high temperatures. The hard candy formulas are especially suitable for placing the ingredients in a lollipop mold and adding a lollipop stick to produce an esthetically pleasing and palatable dosage form for children who may be resistant to other solid dosage forms.

Chewable Gummy Gel Lozenges

Chewable gummy gel lozenges began to be used as a dosage form after gummy bears and worms became very popular as a candy for children. The gummy base can be formulated in the lab or pharmacy using glycerin and gelatin, but it does require some effort to heat the mixture for the proper length of time and add the correct amount of flavorings to mask the bitter taste of glycerin. A simpler way to prepare gummy gel lozenges is to use a commercial gummy gel base (available from compounding supply companies) or actual gummy bears, which can be melted in a beaker and a water bath, and add the active ingredients. The liquid can then be placed into molds to solidify because the flavorings and color are already present.

Preparation Method 17.4

Compounding Gummy Gel Lozenges



See the student CD and website for a video of this procedure.

Michael Mordo, MD 3798 Golden Rodeo Drive Palo Alto, CO 80634	
Name: <u>Marcia Marathon</u>	Date: <u>04-25-06</u>
<u>1223 Dallas Drive, Hoboken, IL 46304</u>	
RX: <i>Clotrimazole 100mg</i> <i>Flavor and color additives as needed</i> <i>Lozibase qs</i> <i>Dispense 10 lozenges containing 10mg each</i> <i>of active ingredient</i>	
Sig: <i>Dissolve one lozenge in mouth Bid x 5 days</i>	
Refill 0 1 2 3	
_____ Dispense as written	<i>Michael Mordo, MD</i> _____ May substitute

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1. Place the lozenge mold on the balance pan and tare the balance to zero out the weight of the mold. (See Fig. 17.6A.)
2. Melt the gummy gel base in a beaker placed in a water bath (See Fig. 17.6B).
3. Add enough of the melted gummy base liquid to nearly fill each of the cavities of the mold and place on the balance pan. (See Fig. 17.6C.)

An oral syringe can be used to fill each of the cavities in the mold without overflowing them. TIP

4. Record the weight of the base. (See Fig. 17.6D.)
5. Place the base back in the water bath and add the correct weight of solid ingredients for the number of lozenge cavities in the mold. (See Fig. 17.6E.)
6. Place the liquid back in the mold, filling each cavity equally, and reweigh the mold with the liquid to be certain that it contains the correct weight for the base plus the active ingredients. (See Fig. 17.6F.)
7. Allow the liquid to solidify. (See Fig. 17.6G.)
8. Remove the lozenges from the mold and weigh them individually to ensure that they are within the acceptable margin of error. Either return them to the mold or package them appropriately for dispensing. (See Fig. 17.6H.)
9. Apply the prescription label and any necessary auxiliary labels, document the calculations and compounding procedures on the master formula sheet, and leave for the final check by the pharmacist.

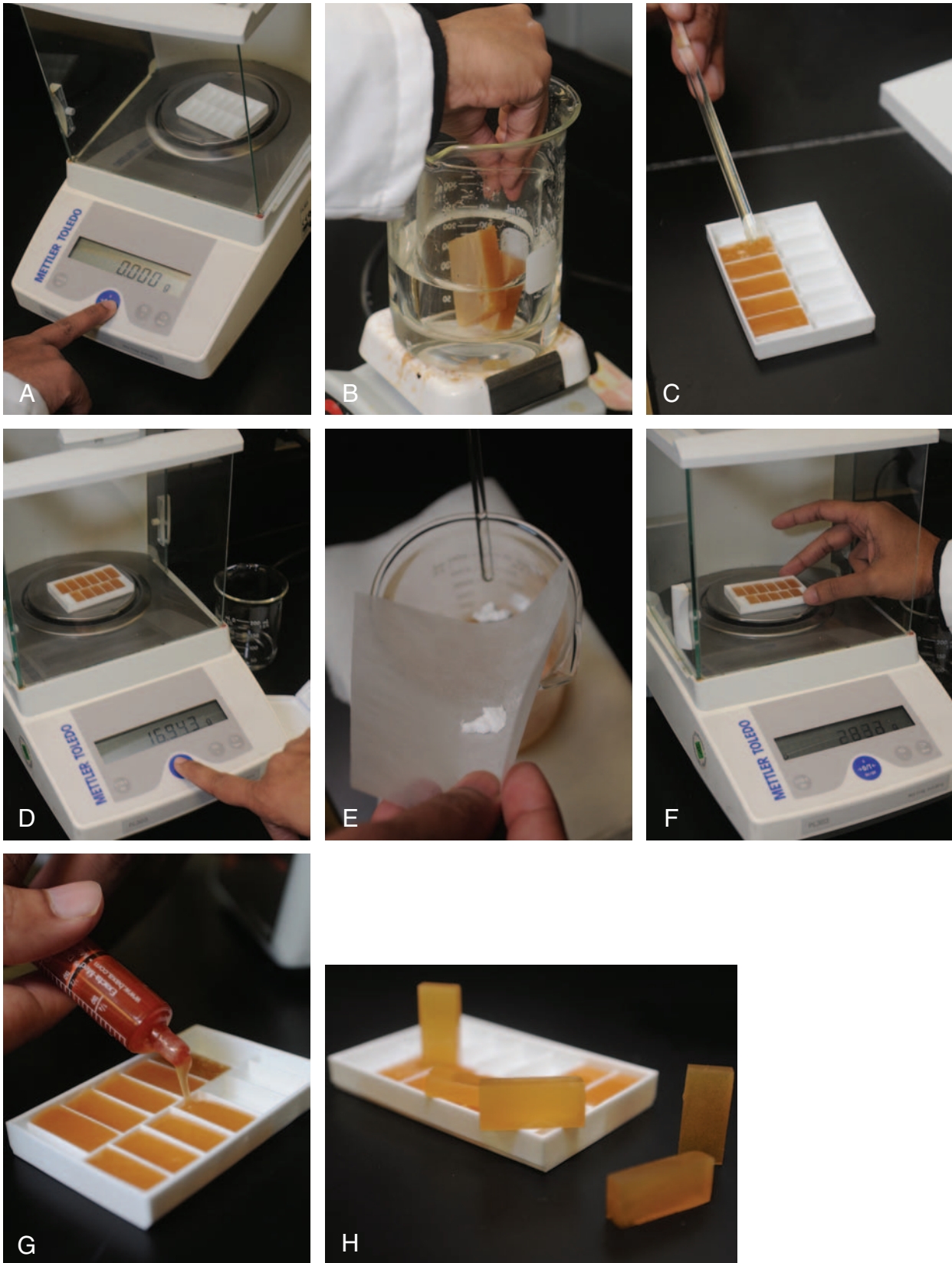


Figure 17.6 Steps for compounding gummy gel lozenges.



Hand-Rolled Lozenges

Hand-rolled lozenges require a few simple ingredients and only basic compounding equipment. However, it does take some experience on the part of the compounder to produce a pharmaceutically elegant lozenge. Even when they are well made by an experienced compounder, hand-rolled lozenges will not have a professional appearance like that of a hard candy or molded lozenge.

Preparation Method 17.5 Compounding Hand-Rolled Lozenges



See the student CD and website for a video of this procedure.

Michael Mordo, M.D. 3798 Golden Rodeo Drive Palo Alto, CO 80634	
Name: <u>Marcia Marathon</u>	Date: <u>4-25-06</u>
<u>1223 Dallas Drive, Hoboken, IL 46304</u>	
RX: Clotrimazole 100mg Acacia 0.7g Powdered sugar 10g Purified water qs Cherry flavor 5 drops Red food coloring 5 drops Dispense 10 lozenges containing 10mg each of active ingredient	
Sig: Dissolve one lozenge in mouth Bid x 5 days.	
_____ Dispense as written	_____ <i>Michael Mordo, MD</i> May substitute

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1. Calculate and weigh of each ingredient needed for the total number of lozenges weighing 2 grams each plus two extras to account for material loss during mixing. (See Fig. 17.7A.)
 $10 \text{ mg of clotrimazole} \times 12 \text{ lozenges} = 120 \text{ mg clotrimazole}$
 $22.18 \text{ g of powdered sugar}$
 1.7 g of acacia
 $\text{Total weight of ingredients} = 24 \text{ g}/12 \text{ lozenges} = 2 \text{ g/lozenge}$
2. Place acacia in mortar with 2 ml water, food coloring, and flavor (See Fig. 17.7B)
3. Mix the weighed active ingredient and powdered sugar together using geometric dilution. Sift the mixture before adding it to the **mucilage** to form a light, homogeneous mixture. (See Fig. 17.7C.)

mucilage A mixture used to hold powders together when compounding lozenges.

4. Gradually add the powdered sugar mixture to the acacia mucilage in the mortar and triturate until it is evenly mixed and dough-like. Wearing gloves, use a spatula to help form the dough mass into a cylinder on the ointment pad. (See Fig. 17.7D.)
5. Measure the cylinder with a ruler and divide into 12 even pieces. Each piece should weigh 2 g for an individual lozenge. (See Fig. 17.7E.)
6. Calculate the percent weight variation from the prescribed amount for each lozenge. Use the lozenges closest to the correct amount and discard the two extra lozenges. (See Fig. 17.7F.)
7. Wrap each lozenge in a foil wrapper and place in a vial. Apply the prescription label with the weight of active ingredient in each lozenge and the expiration date on the label. (See Fig. 17.7G.)
8. Apply any auxiliary labels. Document the compounding procedure and calculations on the master formula sheet and leave for the final check by the pharmacist.





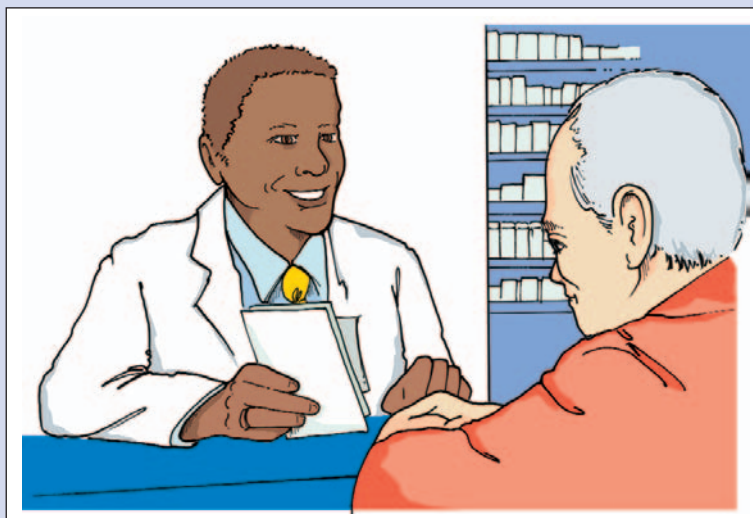
Figure 17.7 Steps for compounding hand-rolled lozenges.

Pharmacies are constantly developing new methods of administering solid dosage forms to serve the needs of individual patients. This chapter has presented some of the basic types of formulations to introduce the fascinating world of extemporaneous compounding. The professional technician should practice basic compounding techniques and become proficient.



Case Study 17.1

Mr. Joseph arrives at the pharmacy with prescriptions for ketoprofen 25 mg, metformin 500 mg, and glyburide 5 mg. Each medication is to be taken two times a day. Mr. Joseph is an elderly male and states that he has trouble keeping track of three different medicines. He doesn't like having to swallow three tablets and wishes there could be one dosage form for all his medical needs. Jim, the pharmacy technician, conveys Mr. Joseph's concerns to the pharmacist.



1. What dosage form could they compound to make medication administration more convenient for the patient and possibly improve compliance?
2. Describe a preparation method that would produce a single dosage form for these three medications.

Chapter Summary

- Topical powders usually contain starch or talc in addition to an active ingredient, such as an antifungal, antibacterial, or antipruritic agent.
- It is important to reduce the particle size of topical powders to produce a product that will be soothing to irritated skin.
- Comminution processes include trituration, levigation, and spatulation.
- Mixing powders to form a homogenous mixture can be accomplished by spatulation, tumbling, and geometric dilution.
- Dry powders can be packaged in shaker-top containers, wide-mouth jars, and individually in small plastic bags or folded powder papers.
- Hard-shell gelatin capsules have a body and lid that can be separated to add active ingredients and diluents.
- The punch method for hand-filling capsules involves placing a homogenous mixture of powders in a rectangular block on an ointment slab and punching the body of the capsule until it is filled.
- Each compounded capsule should be weighed for accuracy.
- Capsule-filling machines can facilitate compounding for large numbers of capsules.
- Lozenges are solid dosage forms intended to be dissolved slowly in the mouth.
- Lozenges can be effective for both topical and systemic effects.
- Lozenges must be kept out of the reach of children because they may be mistaken for candy.

Review Questions

Multiple Choice

Circle the best answer to the following statements.

1. The following procedure is used to reduce the particle size of powders:
 - a. trituration
 - b. geometric dilution
 - c. tumbling
 - d. none of the above

2. Preparing a homogenous mixture of powders can be accomplished by
 - a. spatulation
 - b. geometric dilution
 - c. tumbling
 - d. all of the above
3. Which of the following powders would not be used as a diluent in a topical powder formulation?
 - a. starch
 - b. salicylic acid
 - c. talc
 - d. none of the above
4. If the amount of an ingredient needed for a compounded solid dosage form is less than the minimum weighable quantity of the balance, the technician should
 - a. call the prescriber and ask to change to a different ingredient
 - b. double all the ingredients and save half for the next refill
 - c. prepare an aliquot using the required ingredient and a diluent
 - d. none of the above
5. Methods for compounding lozenges include all of the following except
 - a. hand rolling
 - b. the punch method
 - c. using a gummy gel base
 - d. using a hard candy base

Fill in the Blank

Fill in the blanks with the correct word(s) to complete the sentence.

6. The _____ is the largest capsule size used orally in humans.
7. When using the punch method to fill capsules, the rectangular block of powder should be _____(higher) or (lower) than the height of the capsule body.
8. The advantages of compounded capsules include the following: _____, _____, and _____.
9. Lozenges include _____ and sweeteners to make them more palatable.
10. The weight of an extemporaneously compounded lozenge is usually_____.

True/False

Mark the following statements True or False.

11. _____ Bulk powders can be administered internally to dose antacids, bulk laxatives, and antidiarrheals.
12. _____ Trituration is one way to achieve comminution of dry powders.
13. _____ With a mesh sieve, the larger the mesh number, the larger the particles that can pass through it.
14. _____ In geometric dilution, the powder with the largest quantity is placed in the mortar and the powders with smaller quantities are added slowly; mixing is repeated after each addition.
15. _____ Bulk powders for internal use are sometimes called dusting powders.

Matching

Match the terms in column A with the definitions in column B.

Column A

16. _____ levigating agent
17. _____ demulcent
18. _____ dispersion
19. _____ protectant
20. _____ comminution

Column B

- A. Particle size reduction.
- B. Agent such as starch or talc added to ingredients that may form a eutectic mixture when mixed together.
- C. Substance such as mineral oil or glycerin added to slightly wet powdered ingredients before mixing.
- D. Uniform distribution of each ingredient in a powder mixture.
- E. Agent used topically to soothe irritated tissue in the mouth and throat.

Suggested Readings

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