Pharmaceutical Compounding and Dispensing

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What is Compounding?

In simple terms, compounding is the preparation of personalized medications based on a patient's specific needs. It involves altering existing medications or combining various drug ingredients to create a tailored formula. Compounding allows pharmacists to take a patient's unique health characteristics, such as allergies, intolerances, or conditions, into account when preparing medication. Its primary aim is to offer patients a more personalized treatment plan that not only maximizes the effectiveness of their medication but also minimizes potential side effects.

Benefits of Compounding

There are several advantages to compounded medications, so more and more patients are turning to them for a better healthcare experience. Some of the key benefits include:

1. Customized Medication: Compounded medications cater to individual needs, allowing patients to receive the most suitable treatment based on their specific health requirements.

2. Improved Compliance: Customized medications can make it easier for patients to comply with their prescribed treatment plans, ensuring better health outcomes.

3. Greater Flexibility: Compounding allows for dosage and delivery method adjustments, making it easier for patients to take their medications and receive optimal benefits.

4. Allergy-Friendly Options: Compounding pharmacists can create formulations that exclude specific allergens, providing safe medication alternatives for those who suffer from allergies or intolerances.

5. Enhanced Efficacy: Personalized medication can result in increased efficacy, as the customized formula is created to cater to an individual's specific needs and health conditions.

Understanding Different Compounding Techniques

There are various compounding techniques used by pharmacists to create customized medications, and the choice of technique depends on the patient's needs, the drug's characteristics, and the desired dosage form. Here are some common compounding techniques:

1. Trituration: This method involves grinding solid drug substances into fine particles, which are then incorporated into a powdered form or mixed with an ointment base.

2. Levigation: This process entails reducing the size of drug particles by combining them with a wetting agent or a solvent, forming a smooth paste or suspension.

3. Geometric Dilution: This technique ensures proper blending of ingredients by adding smaller quantities of an ingredient to the larger quantity of another ingredient, effectively dispersing them evenly throughout the mixture.

4. Emulsification: This process involves mixing two immiscible substances, such as oil and water, using an emulsifying agent, creating a uniform, stable mixture called an emulsion.

5. Incorporation: This technique entails mixing various ingredients to create a uniform drug product, such as creams or ointments, ensuring that the drug is evenly distributed throughout the entire preparation.

Tailoring Medication Delivery Methods

Compounding pharmacists not only have the ability to alter the ingredients in a medication but also have the expertise to modify its delivery method. The choice of delivery method can impact the medication's absorption, effectiveness, and convenience for the patient. Some common alternative medication delivery methods include:

1. Topical Gels or Creams: These formulations can be applied directly to the skin, allowing the medication to bypass the digestive system, thereby increasing absorption and reducing the risk of gastrointestinal side effects.

2. Troches or Lozenges: These dosage forms are designed to dissolve in the mouth, delivering the medication directly into the bloodstream through the oral mucosa, which is often faster than ingestion.

3. Suppositories and Enemas: These forms administer medication rectally, providing an alternative for patients who have difficulty swallowing or for those with gastrointestinal issues.

4. Liposomal Delivery: This innovative technology encapsulates the drug in a lipid-based carrier, increasing the drug's solubility and enhancing its therapeutic effect by improving bioavailability and absorption rates.

When a prescription is received for an extemporaneous product there are some considerations to be made before dispensing. These are the following subheadings:

1. Use of the product.
2. Is it safe and suitable for the intended purpose?
3. Calculation of formula for preparation.
4. Method of preparation:
a. Solubility where applicable.
b. Vehicle/diluent.
c. Preservative.
d. Flavouring when appropriate.

5. Choice of container.
6. Labelling considerations:
a. Title.
b. Quantitative particulars.
c. Product-specific cautions (or additional labelling requirements).
d. Patient directions – interpretation of Latin abbreviations where necessary.
e. Recommended British National Formulary cautions when suitable.
f. Discard date.
g. Sample label (you can assume that the name and address of the pharmacy and the words 'Keep out of the reach of children' are pre-printed on the label).

7. Patient advice.

The ideal container should be:

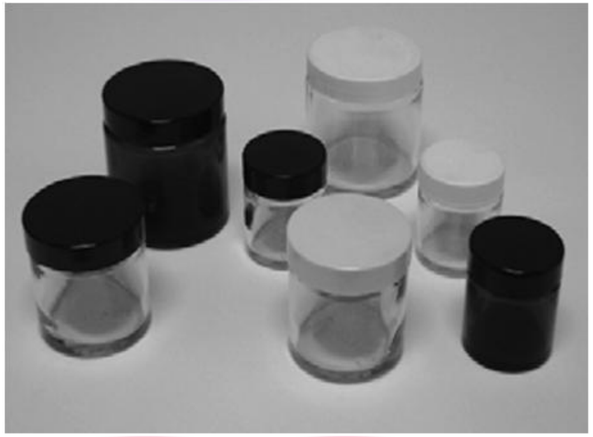
1. Robust enough to protect the contents against crushing during handling and transport.

2. Convenient to use to promote good patient compliance (i.e. encourage patients to take their medication at the correct times).

3. Easy to open and close, especially if the medication is for an elderly or arthritic patient.

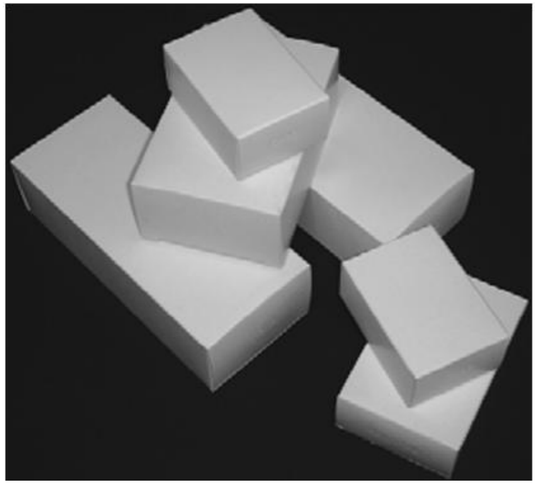
4. Constructed of materials that do not react with the medicine, so the materials of construction should be inert.

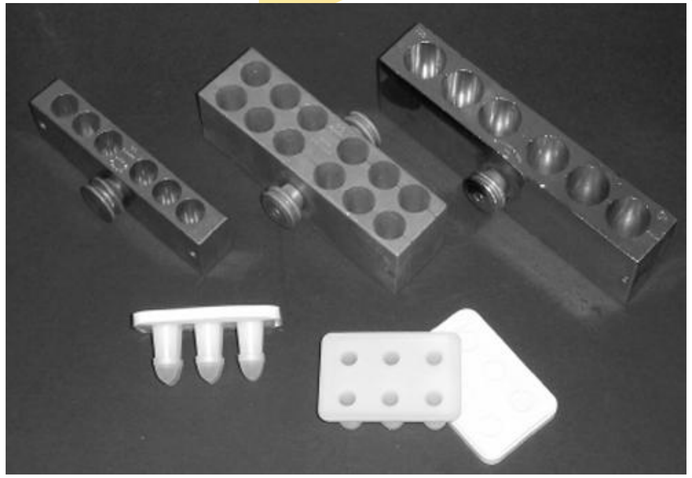
5. Sufficiently transparent to allow for inspection of the contents in the case of liquid preparations.




Steri-Dropper Bottles


Liquid Packaging



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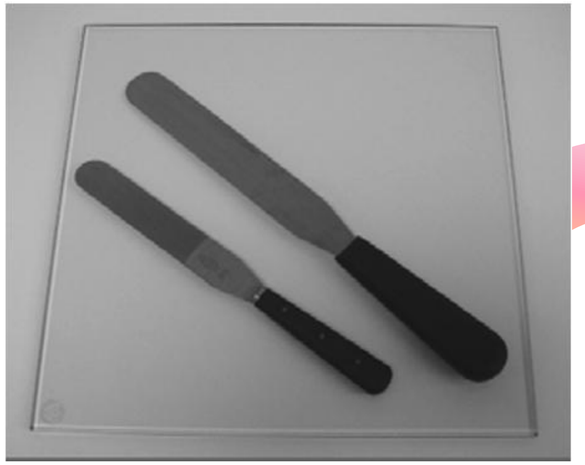


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Preparation	Container	Important auxiliary labels	Suggested discard date
Dusting Powders	Plastic jar preferably with a perforated, reclosable lid	For external use only Not to be applied to open wounds or raw weeping surfaces Store in a dry place	3 months
Ear Drops	Hexagonal amber fluted glass bottle with a rubber teat and dropper closure	For external use only	4 weeks
Elixirs	Plain amber medicine bottle with CRC		4 weeks
Emulsions	Plain amber medicine bottle with CRC	Shake the bottle	4 weeks
Enemas	Amber fluted bottle with CRC	For rectal use only* Warm to body temperature before use	4 weeks
Gargles and Mouthwashes	Amber fluted bottle with CRC	Not to be taken* Do not swallow in large amounts	4 weeks

Ointments	Amber glass jar	For external use only	3 months
Pastes	Amber glass jar	For external use only	3 months
Pessaries	Wrapped in foil and packed in an amber glass jar	For vaginal use only*	3 months
Powders (individual)	Wrapped in powder papers and packed in a cardboard carton	Store in a dry place Dissolve or mix with water before taking See BNF for advisory labels recommended for active ingredient	3 months
Suppositories	Wrapped in foil and packed in an amber glass jar	For rectal use only* See BNF for advisory labels recommended for active ingredient	3 months

BNF – British National Formulary; CRC – Child Resistant Closure

* – See General principles of labelling below

Preparation	Container	Important auxiliary labels	Suggested discard date
Applications	Amber fluted bottle with CRC	For external use only	4 weeks
Capsules	Amber tablet bottle with CRC	See BNF for advisory labels recommended for active ingredient	3 months
Creams and Gels	Amber glass jar or collapsible metal tube	For external use only	4 weeks
Inhalations	Amber fluted bottle with CRC	Not to be taken* Shake the bottle	4 weeks
Linctuses	Plain amber medicine bottle with CRC		4 weeks
Liniments and Lotions	Amber fluted bottle with CRC	For external use only Shake the bottle Avoid broken skin	4 weeks
Mixtures and Suspensions	Plain amber medicine bottle with CRC	Shake the bottle	4 weeks
Nasal Drops	Hexagonal amber fluted glass bottle with a rubber teat and dropper closure	Not to be taken*	4 weeks

References

-Book of "Pharmaceutical Compounding and Dispensing" Chris Langley Dawn Belcher edition.

Additional Practicing Videos

https://www.youtube.com/watch?v=f5NndFVI5sQ

https://www.youtube.com/watch?v=w4NCiQSc1m4

https://www.youtube.com/watch?v=uoOO_7i2T_w

https://www.youtube.com/watch?v=vFkcAJBGXek

“Be the change you wish to see in the world.”

- Anonymous