

? What is the best reference to use when verifying therapeutic equivalence?

- (A) Red Book
- (B) Orange Book
- (C) Drug Facts and Comparisons
- (D) Physicians' Desk Reference

Correct Answer

✔ Choice B

The Orange Book is a compilation of therapeutic equivalence evaluations for FDA approved drugs. The Orange Book contains therapeutic equivalency ratings, which indicate whether a drug is an approved therapeutic substitution.

The Bottom Line

The Orange Book should be utilized to identify if two drugs are therapeutically equivalent.

References

Ballington DA, & Anderson, RJ. Pharmacy Practice for Technicians. St. Paul: Paradigm Publishing, Inc; 2017.

Center for Drug Evaluation and Research. (n.d.). Approved Drug Products with Therapeutic Equivalence Evaluations (Orang. U.S. Food and Drug Administration. FDA. UpToDate. May 24, 2019, <https://www.fda.gov/drugs/drug-approvals-and-databases/approved-drug-products-therapeutic-equivalence-evaluations-orange-book>

Incorrect Answers

- ✘ **Choice A:** The Red Book is used by pharmacy personnel to research drug pricing and packaging information.
- ✘ **Choice C:** Drug Facts and Comparisons is a resource that contains clinical drug information regarding FDA approved and investigational drugs, but would not be the best resource to identify a drug's therapeutic equivalence rating.
- ✘ **Choice D:** The Physician's Desk Reference is a compilation of manufacturers' prescribing information on prescription drugs, but would not be the best resource to identify a drug's therapeutic equivalence rating.

? Which class of antidepressant medications is sometimes avoided because of its numerous interactions with foods?

- (A) Monoamine oxidase inhibitors
- (B) Selective serotonin reuptake inhibitors
- (C) Angiotensin-converting enzyme inhibitors
- (D) Atypical antipsychotics

Correct Answer

✓ Choice A

Monoamine oxidase inhibitors (MAOIs) consist of a group of drugs indicated to treat depression. MAOIs interact with foods containing high levels of tyramine, a naturally occurring substance present in aged, fermented, or air-dried foods. MAOIs and tyramine-containing foods such as aged cheese, pepperoni, and hot dogs may interact. This can trigger drastic spikes in blood pressure, which may result in hospitalization.

The Bottom Line

Monoamine oxidase inhibitors are a class of antidepressant that interact with foods containing high levels of tyramine.

References

Ballington DA, Laughlin MM, McKennon SA. Pharmacology for Technicians. St. Paul, MN: Paradigm Publishing, Inc; 2017.

Incorrect Answers

- ✗ **Choice B:** Selective serotonin reuptake inhibitors (SSRIs) are used to treat depression and some other psychiatric conditions, such as obsessive-compulsive disorder. They typically do not interact with food. Instead, they may interact with other medications. Examples of SSRIs include Prozac (fluoxetine).
- ✗ **Choice C:** Angiotensin-converting enzyme (ACE) inhibitors are used to treat hypertension and congestive heart failure. ACE inhibitors typically do not interact with most food. Examples of ACE inhibitors are lisinopril and benazepril.
- ✗ **Choice D:** Atypical antipsychotics are used to treat psychiatric conditions. Atypical antipsychotics are indicated to treat conditions like schizophrenia and psychosis. Examples of atypical antipsychotics include quetiapine and risperidone.

② Which of the following is a semisolid homogeneous mixture consisting of water in an oil base?

- Ⓐ Ointment
- Ⓑ Cream
- Ⓒ Gel
- Ⓓ Lotion

Correct Answer

✔ **Choice A**

An ointment is a semisolid dosage form in an oil base. Ointments are applied topically and have a greasier texture than that of a cream or lotion. Additionally, ointments are typically thicker than creams and lotions. Ointments generally have longer surface contact time with the skin than creams, which may have a greater absorption compared to creams.

The Bottom Line

An ointment is a semisolid dosage form in an oil base.

References

Ballington DA, Laughlin MM, McKennon SA. Pharmacology for Technicians. St. Paul, MN: Paradigm Publishing, Inc; 2017.

Incorrect Answers

✘ **Choice B:** A cream is a semisolid dosage form in a water base. Creams contain a lower percentage of oil than ointments so they are not as greasy or viscous as ointments. Despite creams having less contact time with skin, they typically are preferred by patients because they are less greasy.

✘ **Choice C:** A gel is a semisolid dosage with has an aqueous base. Gels contain a condensed mass encapsulated in merged in a liquid. Gels typically liquify when it comes in contact with skin and are often used on mucous membranes or the skin. Gels are not typically as thick or viscous as ointments. An example of a gel is Voltaren Gel.

✘ **Choice D:** A lotion is a semisolid dosage form in a water base. Lotion typically is less viscous than creams or ointments. Lotion can be applied to a larger surface area of the body. For example, Oxistat is an antifungal lotion indicated to treat topical fungal infections.

? Which of the following drug classes is indicated to treat gastroesophageal reflux disease?

- (A) Monoamine oxidase inhibitors
- (B) HMG-CoA reductase inhibitors
- (C) Angiotensin-converting-enzyme inhibitors
- (D) Proton pump inhibitors

Correct Answer

✓ **Choice D**

PPIs, or proton pump inhibitors, are a group of drugs that reduce stomach acid production. This reduction helps to treat gastroesophageal reflux disease (GERD). GERD is caused by stomach acid irritating the food pipeline, and this reduction of acid helps alleviate symptoms of the disease. Examples of PPIs include omeprazole, lansoprazole, and esomeprazole.

The Bottom Line

Proton pump inhibitors are indicated to treat gastroesophageal reflux disease.

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Proton pump inhibitors end in the suffix "-prazole."

References

Ballington DA, Laughlin MM, McKennon SA. Pharmacology for Technicians. St. Paul, MN: Paradigm Publishing, Inc; 2017.

Incorrect Answers

- ✗ **Choice A:** Monoamine oxidase inhibitor (MAOIs) do not treat GERD. MAOIs are a class of drugs that inhibit or reduce the activity of monoamine oxidase enzymes. The inhibition of these enzymes elevates the levels of norepinephrine, serotonin, and dopamine, which treats depression. Examples of MAOIs include selegiline and phenelzine.
- ✗ **Choice B:** HMG-CoA reductase inhibitors do not treat GERD. Statins, also known as HMG-CoA reductase inhibitors, are a class of lipid-lowering drugs indicated to treat high cholesterol. An example of a HMG-CoA reductase inhibitor is simvastatin.
- ✗ **Choice C:** Angiotensin-converting-enzyme (ACE) inhibitors do not treat GERD. ACE inhibitors are a class of drugs indicated in the treatment of hypertension and congestive heart failure. An example of an ACE inhibitor is lisinopril.

? When one drug is mixed with others and produces an unacceptable product by some physical or chemical reaction, this is known as:

- (A) Instability
- (B) Noncompliance
- (C) Incompatibility
- (D) Trituration

Correct Answer

✓ **Choice C**

Incompatibility occurs when one drug is mixed with others and produces an unacceptable product by some physical or chemical reaction. The technician should review and follow the compounding directions in the master formulation record to prevent any risk of incompatibility. Incompatibilities typically result from changes in solubility after compounding two or more drugs, which can result in changes in color or the formation of a precipitate or unintended substance.

The Bottom Line

Incompatibility occurs when a drug is mixed with other substances and produces an unacceptable product by some physical or chemical reaction.

References

Ballington DA, Laughlin MM, McKennon SA. Pharmacology for Technicians. St. Paul, MN: Paradigm Publishing, Inc; 2017.

Incorrect Answers

- ✗ **Choice A:** Instability occurs when a compounded product is altered as a result of improper storage or storage conditions. A compounded product must be stored under the correct conditions in order to ensure the drug maintains stability. A drug's stability pertains to that substance's ability to maintain the physical, chemical, therapeutic, and microbial properties.
- ✗ **Choice B:** Noncompliance does not pertain to nonsterile compounding. Noncompliance refers to a patient that does not take a prescribed medication or follow a prescribed course of treatment. Compliance refers to patients taking the medication at the right dose or on the correct schedule.
- ✗ **Choice C:** Trituration is a method used in some nonsterile preparations. Trituration is the process of reducing the particle size of a substance utilizing a mortar and pestle. Trituration can also refer to the nonsterile compounding process where a potent drug powder is diluted with an inert diluent powder.