

Selection and Application of Drugs: A Comprehensive Guide to Pharmaceutical Sciences

Pharmaceutical sciences encompass the study of drugs and their interactions with living organisms. These interactions include the absorption, distribution, metabolism, and excretion of drugs, as well as their therapeutic and toxic effects. The selection and application of drugs is a complex process that requires a thorough understanding of pharmacology, therapeutics, and clinical pharmacy.

Drug Selection

The selection of the most appropriate drug for a given patient depends on a number of factors, including the patient's age, weight, sex, medical history, and current medications. The drug's efficacy, safety, and cost should also be considered.



Rapid Prototyping Technology: Selection and Application (Drugs and the Pharmaceutical Sciences)

by Tom Lodge

★★★★★ 5 out of 5

Language : English

File size : 85780 KB

Screen Reader: Supported

Print length : 248 pages

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The following are some of the most important factors to consider when selecting a drug:

- **Efficacy:** The efficacy of a drug is its ability to produce the desired therapeutic effect. The efficacy of a drug can be measured by its potency, which is the amount of drug required to produce a specific effect.
- **Safety:** The safety of a drug is its ability to be used without causing harm to the patient. The safety of a drug can be measured by its toxicity, which is the amount of drug that can be tolerated without causing adverse effects.
- **Cost:** The cost of a drug is an important consideration, especially for patients who must take multiple medications.

Drug Application

Once a drug has been selected, it must be applied in the correct dosage and route of administration. The dosage of a drug is the amount of drug that is given to a patient. The route of administration is the way in which the drug is given to the patient. The most common routes of administration are oral, parenteral, and topical.

The following are some of the most important factors to consider when applying a drug:

- **Dosage:** The dosage of a drug is determined by the patient's age, weight, sex, medical history, and current medications. The dosage of a drug can be expressed in terms of milligrams (mg), micrograms (mcg), or units.

- **Route of administration:** The route of administration of a drug is determined by the drug's properties and the patient's condition. The most common routes of administration are oral, parenteral, and topical.

Pharmaceutical Sciences

Pharmaceutical sciences is a broad field that encompasses the study of drugs and their interactions with living organisms. The following are some of the most important areas of pharmaceutical sciences:

- **Pharmacology:** Pharmacology is the study of the effects of drugs on living organisms. Pharmacologists investigate the mechanisms of action of drugs, their absorption, distribution, metabolism, and excretion.
- **Therapeutics:** Therapeutics is the study of the use of drugs to treat disease. Therapists develop and evaluate drug regimens for the treatment of specific diseases.
- **Clinical pharmacy:** Clinical pharmacy is the practice of pharmacy in a clinical setting. Clinical pharmacists provide drug therapy recommendations to patients and healthcare providers.
- **Drug development:** Drug development is the process of bringing a new drug to market. Drug developers design and conduct clinical trials to evaluate the safety and efficacy of new drugs.
- **Drug discovery:** Drug discovery is the process of identifying new drug targets and developing new drugs to treat disease.
- **Drug delivery:** Drug delivery is the study of how drugs are delivered to the body. Drug delivery scientists develop new drug delivery systems

to improve the absorption, distribution, metabolism, and excretion of drugs.

- **Drug metabolism:** Drug metabolism is the study of how drugs are metabolized by the body. Drug metabolists investigate the enzymes that metabolize drugs and the products of drug metabolism.
- **Pharmacodynamics:** Pharmacodynamics is the study of the effects of drugs on living organisms. Pharmacodynamicists investigate the relationship between drug concentration and drug effect.
- **Pharmacokinetics:** Pharmacokinetics is the study of the absorption, distribution, metabolism, and excretion of drugs. Pharmacokineticists develop mathematical models to describe the pharmacokinetics of drugs.

The selection and application of drugs is a complex process that requires a thorough understanding of pharmacology, therapeutics, and clinical pharmacy. Pharmaceutical sciences is a broad field that encompasses the study of drugs and their interactions with living organisms. The following are some of the most important areas of pharmaceutical sciences: pharmacology, therapeutics, clinical pharmacy, drug development, drug discovery, drug delivery, drug metabolism, pharmacodynamics, and pharmacokinetics.



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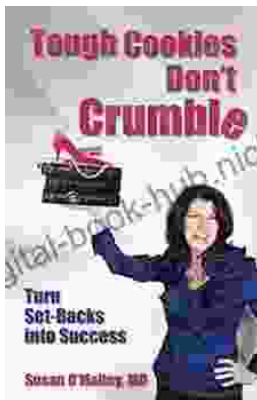
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