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Editorial

Editorial Note on a Drug Action

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ABOUT THE STUDY

The effect of a drug on the human body (or any other parts of the body) is called pharmacodynamics, and the body's response to the drug is called pharmacokinetics. Drugs that invade humans tend to stimulate specific receptors, ion channels, act on enzymes, and transport proteins. As a result, they provoke certain reactions in the human body. When the receptor is activated, it either triggers a specific reaction directly in the body or stimulates the release of hormones and other endogenous drugs in the body. Drugs interact with receptors by bonding to specific binding sites. Since most receptors are made of proteins, drugs can interact with amino acids to change the conformation of the receptor protein. Pharmacotherapy aims to provide a specific pharmacological response of desired intensity and duration while avoiding the side effects of the drug. The relationship between dose and clinical response has been studied for several drugs using a Pharmacokinetic / Pharmacodynamics (PK / PD) modeling approach, generally based on the relationship between plasma concentration and response [1,2]. For other drugs, a simpler concentration between relationships is mathematically modeled in an ideal *in vitro* system to conceptualize receptor occupancy and drug response. This model assumes that the drug interacts reversibly with its receptors, producing an effect proportional to the number of occupied receptors and maximizing the effect when all receptors are occupied. The drug can be applied directly to the skin or mucous membranes for local effects. Such medications are often prescribed to minimize systemic absorption. Examples of topical administration include application of corticosteroid cream to areas with contact dermatitis (eg, poisonous tsuta), administration of eye drops containing β-adrenergic antagonists to control glaucoma, and congestion, includes eye drops of nasal drops containing α-adrenergic agonists to relieve. Most receptors are proteins [3].

The most distinctive of these are regulatory proteins, enzymes, transport proteins, and structural proteins. Nucleic acids are also important drug receptors, particularly for cancer chemotherapeutic agents. Many trans membrane receptors are linked to guanosine triphosphate binding proteins, which activate second messenger systems. Two important second messenger systems are Cyclic Adenosine Monophosphate (CAMP) and the Phosphoinositides [4]. Protein tyrosine kinase receptors are generally trans membrane enzymes that phosphorylate proteins exclusively on tyrosine residues, rather than on serine or threonine residues. They include endocrine hormone receptors for insulin and receptors for several growth hormones. Most interactions between a drug and a receptor or between a drug and an enzyme are reversible: After a while, the drug disengages, and the receptor or enzyme resumes normal function. Sometimes an interaction is largely irreversible, and the drug`s effect persists until the body manufactures more enzymes. The effectiveness of a drug depends on the amount of drug that reaches the receptor and the degree of attraction (affinity) between the drug and the cell surface receptor. When bound to a receptor, the drug has a different ability to produce an effect (intrinsic activity). The affinity and inherent activity of a drug is determined by its chemical structure. Drugs that activate the receptor (agonist) must have both high affinity and inherent activity. They need to bind effectively to the receptor, and the drug that binds to that receptor (drug-receptor complex) must be able to affect the target area. In contrast, drugs that blocks a receptor (antagonist) need to bind effectively, but have little or no inherent activity because they have the ability to prevent agonists from interacting with that receptor. Orally ingested tablets or capsules go through three stages: pharmaceutics, pharmacokinetics, and pharmacodynamics [5,6].

Pharmaceutics phase

Approximately 80% of the drug is taken orally. The pharmaceutical stage (dissolution) is the first stage of drug action. In the Gastrointestinal (GI) tract, the drug must be dissolved in order to be absorbed. Solid medicines (tablets or capsules) need to break down into small particles in order to dissolve in a liquid. Tablets are not 100% medicine. Fillers and inert substances, commonly referred to as excipients, are used in drug preparation to allow the drug to take a particular size and shape and to facilitate the dissolution of the drug. Some

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pharmaceutical additives, such as potassium (K) and sodium (Na) ions of penicillin potassium and sodium penicillin enhance the absorption capacity of the drug. Penicillin is poorly absorbed from the gastrointestinal tract due to stomach acid. However, penicillin may be absorbed by the production of potassium or sodium salt drugs [7,8].

Pharmacokinetic phase

Pharmacokinetics is the process of drug transfer to produce a drug effect. The four processes are absorption, distribution, metabolism (or changes in the body), and excretion (or excretion). Nurses apply their knowledge of pharmacokinetics when investigating possible side effects in patients. Nurses share the results of their assessments with members of the medical team in a timely manner to promote safe and effective medications for their patients. Absorption is the transfer of drug particles from the gastrointestinal tract to body fluids by passive absorption, active absorption, or pinocytosis. Most oral medications are absorbed into the surface area of the small intestine by the action of swollen mucosal villi. Absorption decreases when the number of villi decreases due to illness, drug action, or removal of the small intestine. Protein-based drugs such as insulin and growth hormone are destroyed in the small intestine by digestive enzymes [9,10].

Pharmacodynamics phase

This phase describes the mechanism of drug action by which drug molecules produce their effects in the body [11].

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