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Commentary

A Short Note on Importance of Pharmacodynamics

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DESCRIPTION

Pharmacodynamics (sometimes described as the effect of a drug on the body) is a study of the biochemical, physiological, and molecular effects of a drug on the body, including receptor binding (including receptor sensitivity).

Pharmacodynamics with pharmacokinetics (what the body does to the drug or the fate of the drug in the body) helps explain the relationship between dose and effect, that is, the effect of the drug. The pharmacological reaction depends on the drug binding to the target. The concentration of the drug at the receptor site affects the effectiveness of the drug. Pharmacodynamics of drugs can be affected by physiological changes

- Disability or illness
- Aging process
- Other drugs that affect pharmacodynamics responses

Disorders include several forms of genetic mutation, thyrotoxicosis, malnutrition, myasthenia gravis, Parkinson's disease, and insulin-resistant diabetes. These disorders can change receptor binding, alter the level of binding proteins, or decrease receptor sensitivity. Aging tends to affect pharmacodynamics responses through alterations in receptor binding or in post receptor response sensitivity (see table Effect of Aging on Drug Response). Pharmacodynamics drug–drug interactions result in competition for receptor binding sites or alter post receptor response.

IMPORTANCE OF PHARMACODYNAMICS

Pharmacodynamics analysis is important because it helps to understand how a drug behaves in the body and how the body reacts to it. Drug developers use the insights gained from pharmacodynamics analysis to design better clinical trials (for example, the doses used and how different drugs interact in the body). Clinicians use information from pharmacodynamic analysis (as shown on the drug label or package insert) with different types of patients (eg, with and without renal dysfunction, or with the elderly). Treat young patients).

EFFECTS OF PHARMACODYNAMICS ON THE BODY

1. Induce (mimic) or inhibit (prevent) or prevent normal physiological/biochemical and pathological processes in animals.

2. Inhibits the life processes of internal or ectoparasites and microorganisms.

There are seven main drug effects:

- Stimulating effects due to direct receptor agonyism and downstream effects.
- Attenuating effects due to direct receptor agonistism and downstream effects (eg inverse agonists)
- Blocking/antagonist effect (similar to silent antagonist), the drug binds to the receptor but does not activate it.
- Stabilizing effect, the drug does not appear to be either irritating or inhibitory (for example, some drugs are common, such as opioid-dependent buprenorphine and schizophrenic aripiprazole, depending on the dose and recipient. Has receptor activity that stabilizes the activation of various receptors).
- Exchange/exchange or accumulation of substances to form reserves (eg glycogen storage).
- Direct and beneficial chemical reactions such as free radical capture.
- Direct harmful chemical reactions that can damage or destroy cells due to induced toxicity or fatal damage (cytotoxicity or irritation).

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CONCEPTS OF PHARMACODYNAMICS

There are several important concepts and terms used in describing pharmacodynamics that describe the magnitude and duration of a drug's effect.

E max is the maximum effect of the drug on the measured parameters. For example, this could be a measure of platelet inhibition as an *ex-vivo* test, or a decrease in maximal blood pressure.

EC50 is the steady-state concentration of the drug that produces half the maximum effect.

The Hill coefficient is the slope of the relationship between drug concentration and drug effect. A Hill coefficient above 2 indicates a steep relationship (that is, a small change in concentration causes a large change in the effect), and a Hill coefficient above 3 indicates an almost instantaneous "all-or-nothing" effect.