

Dose Response Relationship, half life withdrawal period, potency, efficacy

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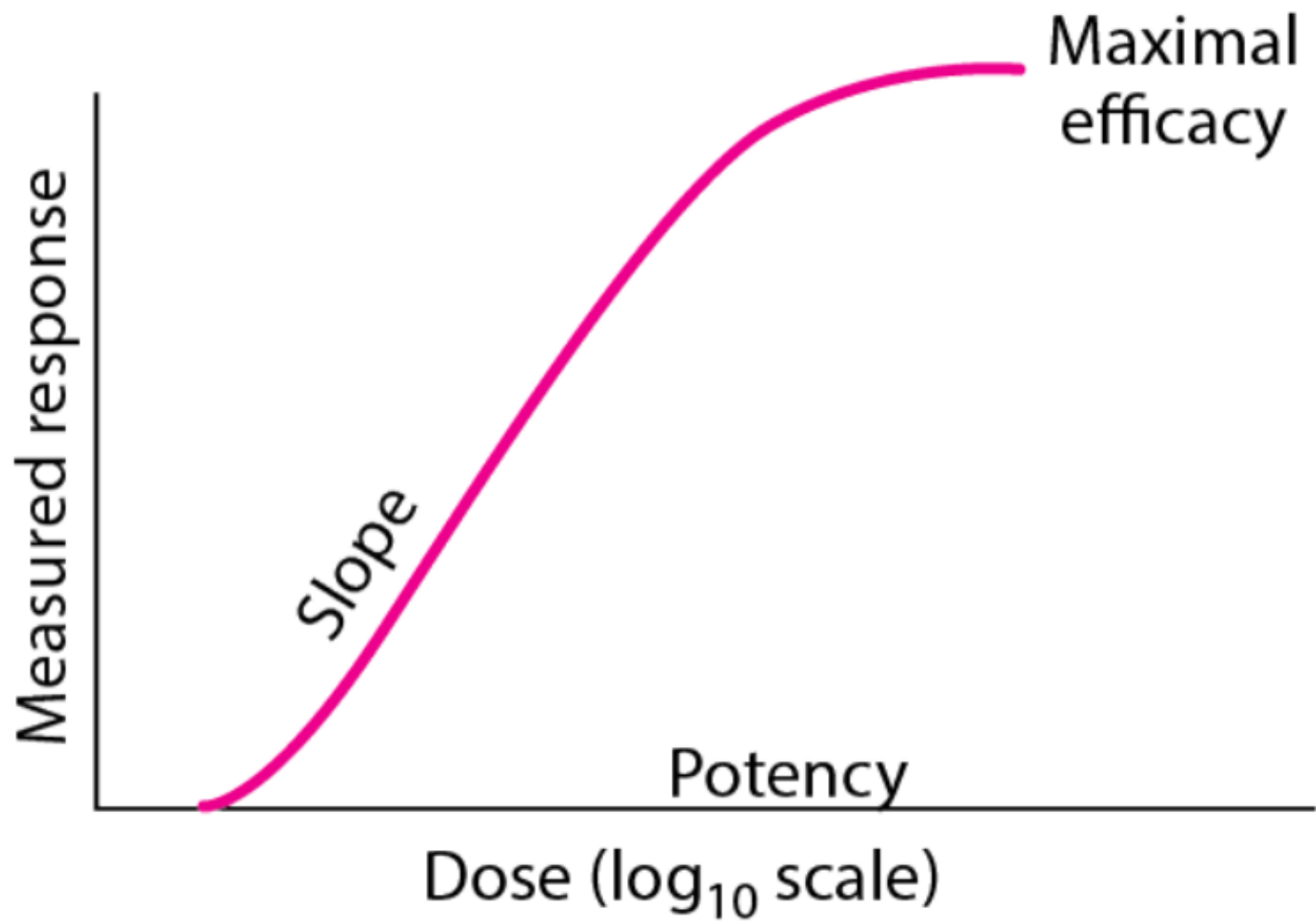
Basic concepts

- Regardless of how a drug effect occurs—through binding or chemical interaction—the concentration of the drug at the site of action controls the effect.
- However, response to concentration may be complex and is often nonlinear. The relationship between the drug dose, regardless of route used, and the drug concentration at the cellular level is even more complex.

- Dose-response data are typically graphed with the dose or dose function (eg, \log_{10} dose) on the x-axis and the measured effect (response) on the y-axis. Because a drug effect is a function of dose and time, such a graph depicts the dose-response relationship independent of time.
- Measured effects are frequently recorded as maxima at time of peak effect or under steady-state conditions (eg, during continuous IV infusion). Drug effects may be quantified at the level of molecule, cell, tissue, organ, organ system, or organism.

Dose-response curve

- A hypothetical dose-response curve has features that vary: -
- Potency (location of curve along the dose axis)
- Maximal efficacy or ceiling effect (greatest attainable response)
- Slope (change in response per unit dose)



- Biologic variation (variation in magnitude of response among test subjects in the same population given the same dose of drug) also occurs.
- Graphing dose-response curves of drugs studied under identical conditions can help compare the pharmacologic profiles of the drugs. This information helps determine the dose necessary to achieve the desired effect.