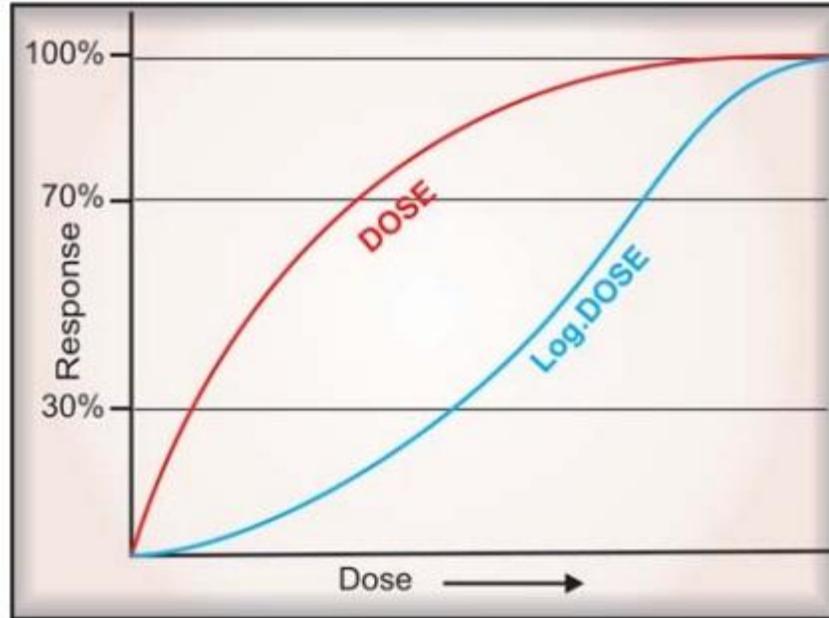
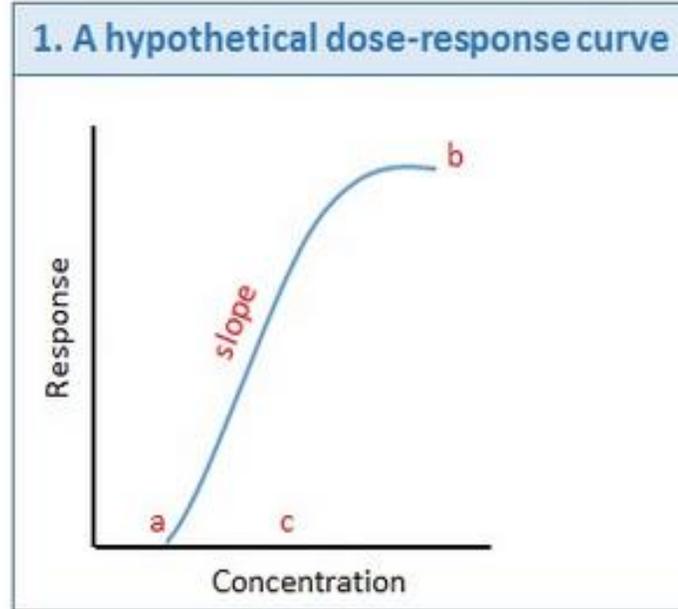


Dose-response relationships



Dose-response and log dose-response curves



1. A hypothetical dose-response curve

Dose-response graphs typically have the dose on the X-axis and the measured effect (i.e. the measured response) on the y-axis. Plotting the logarithm of the concentration generally results in sigmoidal plots as shown on the left.

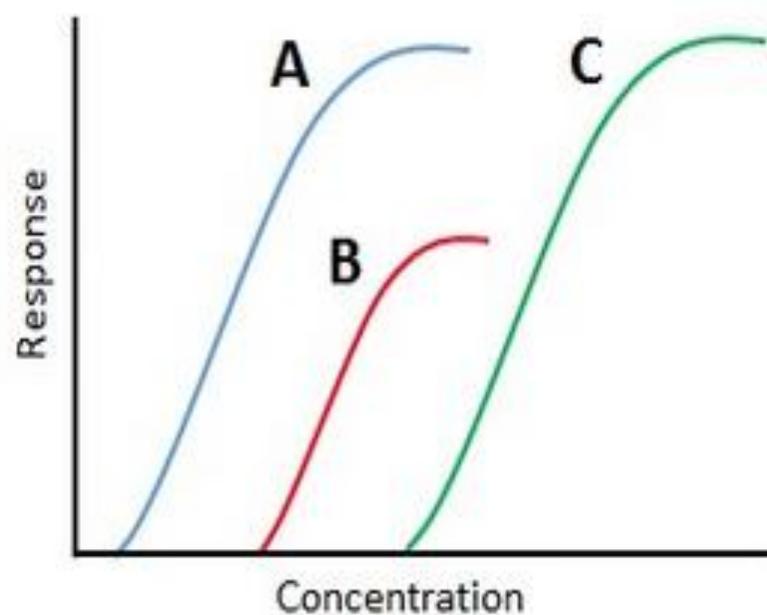
The main parameters that can be identified by dose-response curves are

- Potency- the position of the curve along the x-axis **a**
- Maximal efficacy- the greatest response attainable **b**
- Slope- change in response per unit dose (and half maximal dose **c**)

Potency is a measure of how much a drug is required in order to produce a particular effect. Therefore, only a small dosage of a high potency drug is required to induce a large response.

The upper limit of DRC is the index of *drug efficacy* and refers to the maximal response that can be elicited by the drug

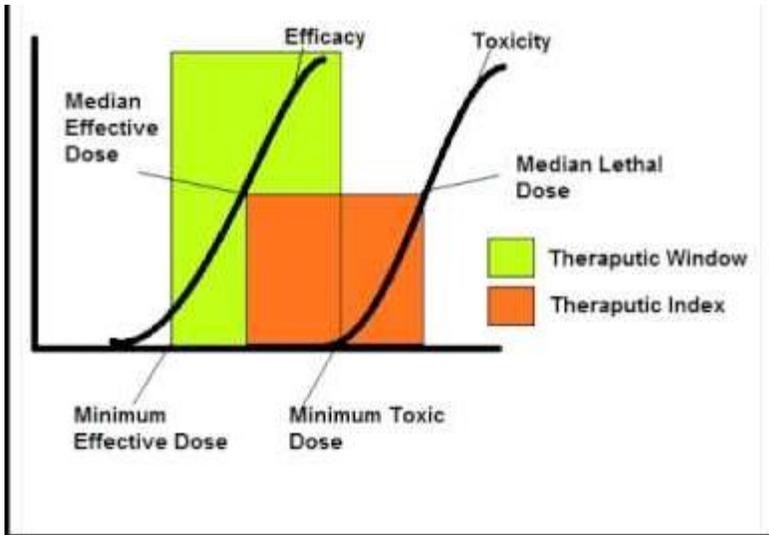
2. Comparison of dose-response curves



2. Comparison of dose-response curves

The pharmacologic profiles of individual drugs can be differentiated by comparing their dose-response curves.

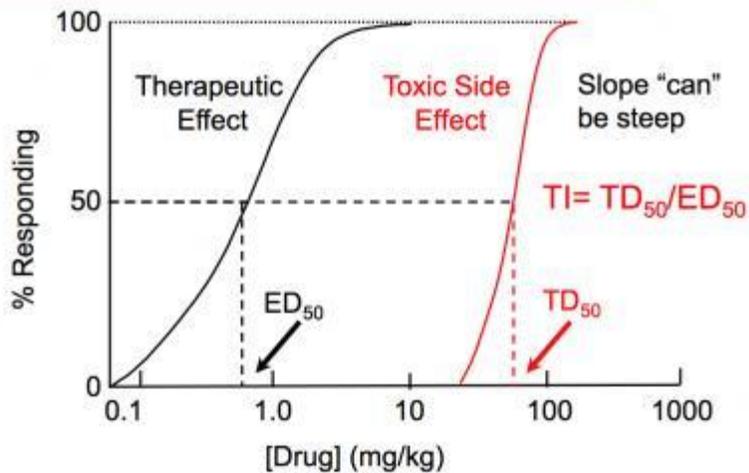
In the graph on the left, drug **A** has greater biological activity per dosing unit and is therefore considered to be more potent than drugs **B** or **C**- shown by its left-shifted position on the x-axis. Drugs **A** and **C** have equal efficacy- indicated by their maximal attainable response (ceiling effect). Drug **B** is more potent than drug **C**, but its maximal efficacy is lower.



Therapeutic Window

the range of drug dosages

Drug Safety - Therapeutic Index



Therapeutic Index

a quantitative measurement of the relative safety

<https://openmedscience.com/tag/therapeutic-window/>
<https://openmedscience.com/tag/therapeutic-index/>