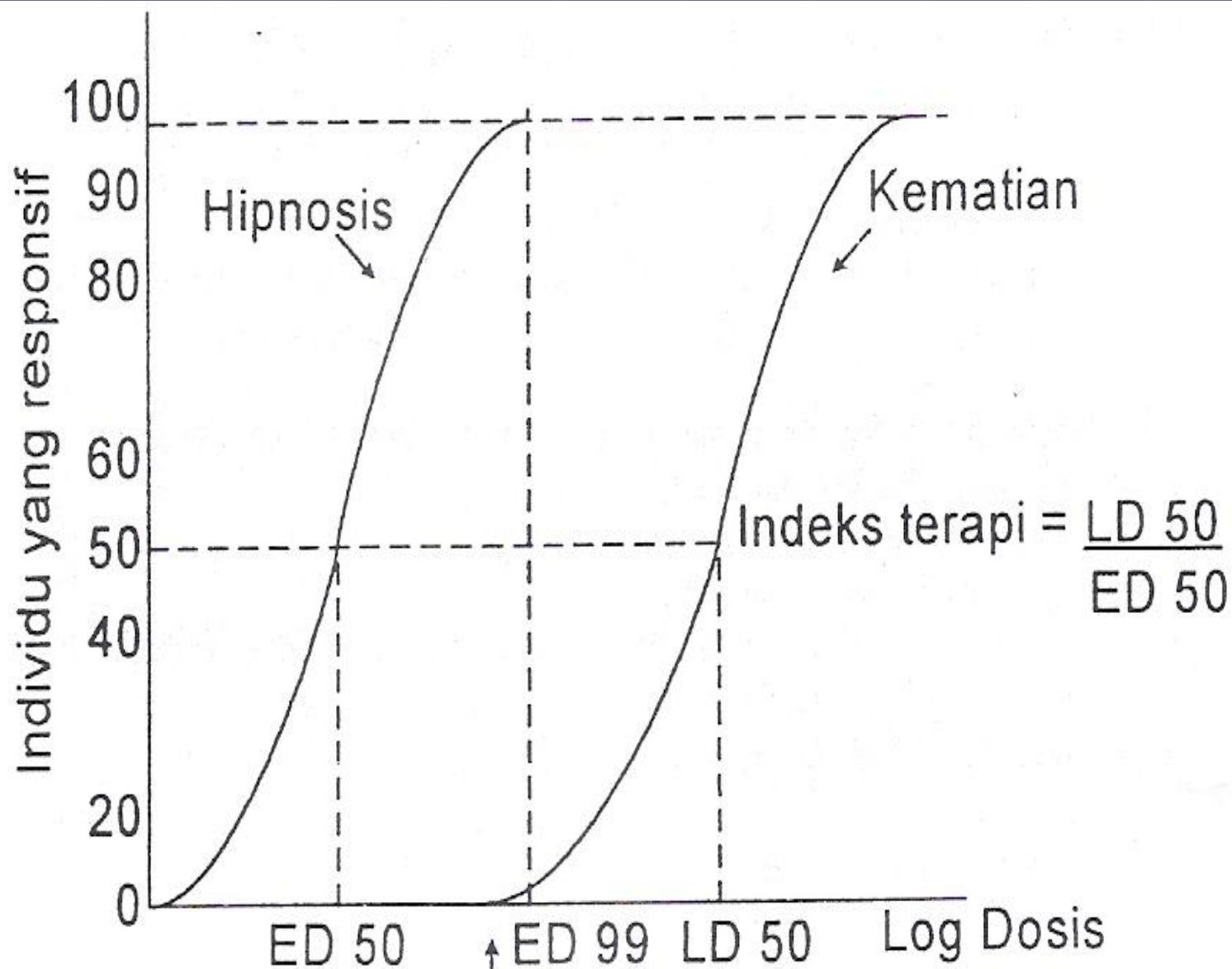


ANALISIS PROBIT

**Oleh : Atina Husaana
Bagian Farmakologi & Terapi
FK Unissula**

Probit analysis is a type of regression used to analyze binomial response variables.

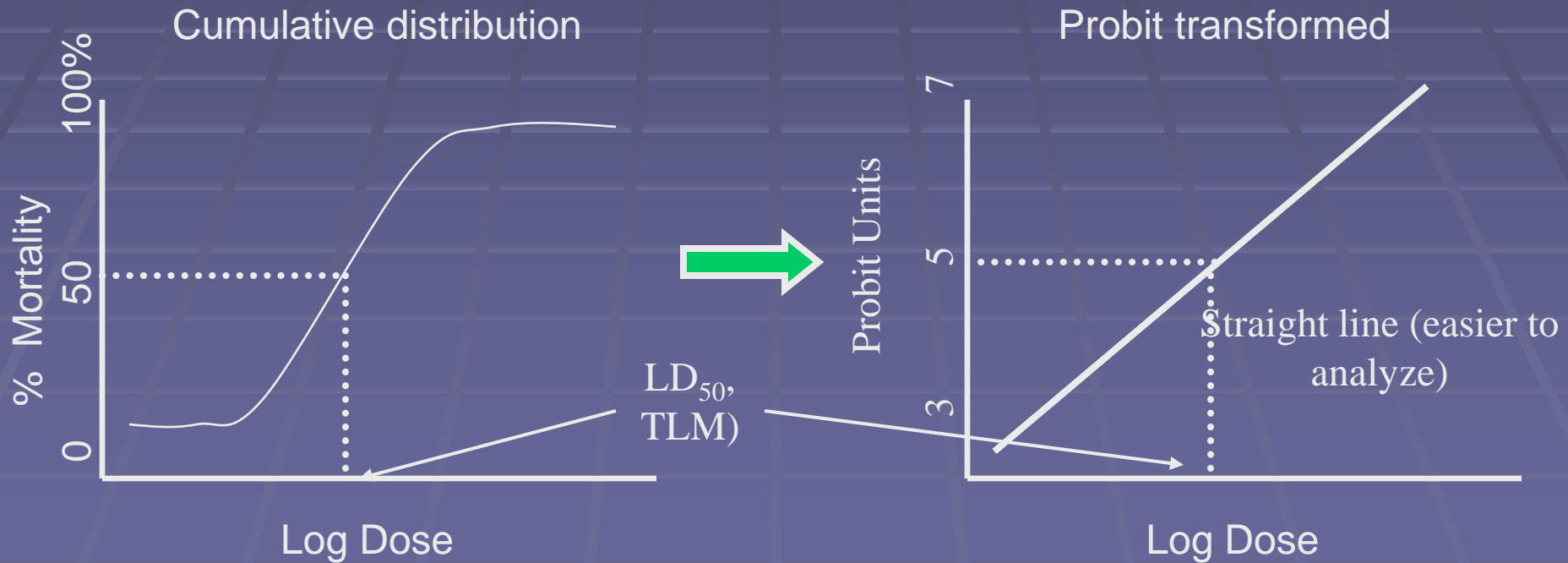
- It transforms the sigmoid dose-response curve to a straight line that can then be analyzed by regression.
- Probit analysis can be conducted by one of three techniques:
 1. Using tables to estimate the probits and fitting the relationship by eye,
 2. Hand calculating the probits, regression coefficient, and confidence intervals, or
 3. Having a statistical package such as SPSS do it all for you.



Kurva log dosis persen responsif

Converting a curvilinear line to straight line

- Difficult to evaluate a curved line
- Conversion to a straight line would make evaluation easier



Aplikasi Analisis Probit dalam Penghitungan :

1. ED-50 ("Effective dose, 50%") :
Amount of drug that produces a therapeutic response in 50% of the subjects taking it.

Effective dose is the median dose that produces the desired effect of a drug, often determined based on analysing the dose-response relationship specific to the drug.

Menyatakan dosis obat yang dapat menimbulkan efek farmakologi pada 50% hewan percobaan.

2. LD50 (Lethal Dose, 50%), LC50 (Lethal Concentration, 50%) or LCt50 (Lethal Concentration & Time) of a toxic substance or radiation is :

The dose required to kill half the members of a tested population after a specified test duration.

LD50 figures are frequently used as a general indicator of a substance's acute toxicity.

Menyatakan dosis obat yang dapat menyebabkan kematian pada 50% hewan percobaan.

NOTES

Margin of safety : jarak antara ED50 dengan LD50.

$$\text{Indeks terapi} = \frac{\text{LD50}}{\text{ED50}}$$

Example probit analysis

| Concentration (mg/L) | Deaths | % |
|----------------------|--------|-----|
| 0 (Control) | 0/10 | 0 |
| 0.3 | 0/10 | 0 |
| 1 | 0/10 | 0 |
| 3 | 1/10 | 10 |
| 10 | 4/10 | 40 |
| 30 | 9/10 | 90 |
| 100 | 10/10 | 100 |

Look at data → should be able to tell immediately that LC50 should be between 10 and 30 mg/L

Graph → fit line by eye (approximately equal number above and below line)

| Konsentrasi X % (v/v) | Log Dosis | Rerata absorpsi | % inhibisi | %hidup |
|--------------------------|--------------|-----------------|------------|--------|
| 50 | 1.698970004 | 0.0893 | 100 | 0 |
| 25 | 1.397940009 | 0.0957 | 99 | 1 |
| 12.5 | 1.096910013 | 0.1083 | 96 | 4 |
| 6.25 | 0.795880017 | 0.1547 | 86 | 14 |
| 5 | 0.698970004 | 0.2137 | 73 | 27 |
| 2.5 | 0.397940009 | 0.2847 | 57 | 43 |
| 1.25 | 0.096910013 | 0.406 | 30 | 70 |
| 0.625 | -0.204119983 | 0.5287 | 2 | 98 |

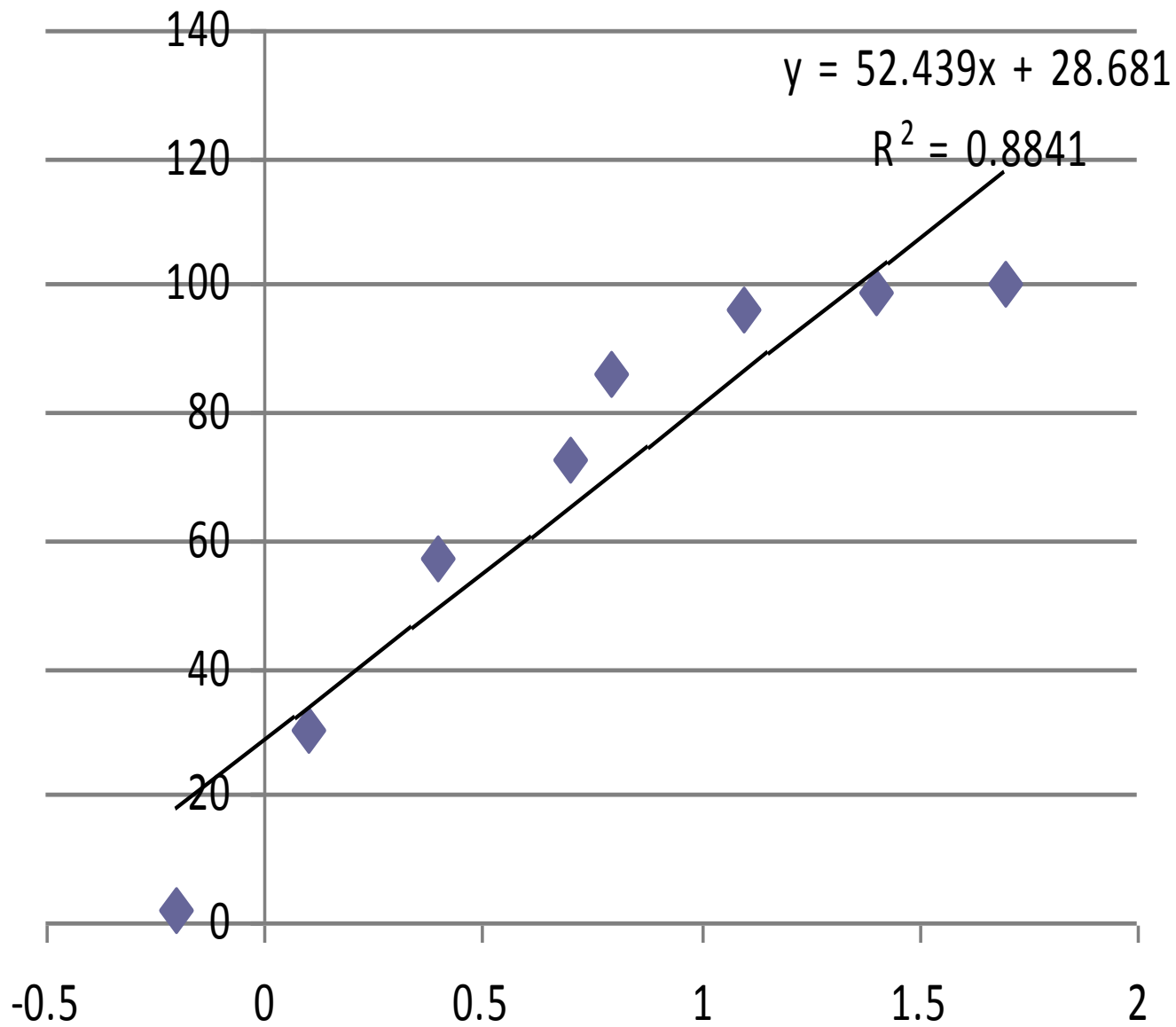
Kontrol sel 0.5383

Kontrol media 0.0913

Inhibisi : $((\text{kontrol sel-kontrol media}) - (\text{sampel-kontrol media})) * 100\% / (\text{Kontrol sel-kontrol media})$

%hidup = $(\text{sampel-kontrol media}) * 100\% / (\text{kontrol sel-kontrol media})$

IC50 =
2,416



◆ Series1
— Linear