

Statistics in MS Excel – Model Examples I

Example 1:

In a horse farm the effect of two veterinary preparations on the Mg level in blood serum of horses has been monitored. In 10 horses, to which the preparation No.1 was applied, the following Mg levels in blood serum have been found (in mmol.l^{-1}):

0.91, 0.79, 0.82, 1.03, 0.82, 0.93, 0.90, 0.87, 0.89, 0.93.

In other 10 horses, to which the preparation No.2 was applied, the following Mg levels in blood serum have been found (in mmol.l^{-1}):

0.97, 0.99, 1.24, 1.17, 0.87, 1.20, 0.97, 0.96, 0.99, 0.95.

Do preparations differ in its effect on the Mg level in blood serum of horses?

Example 2:

In stock of dairy cows the effect of a new veterinary preparation on the AST activity in blood serum of dairy cows has been monitored. In 10 dairy cows (control ones), to which the preparation was not applied, the following AST activities in blood serum have been found (in $\mu\text{mol.l}^{-1}$):

0.337, 0.302, 0.405, 0.400, 0.381, 0.398, 0.377, 0.392, 0.345, 0.409.

In 10 dairy cows (test ones), to which the preparation was applied, the following AST activities in blood serum have been found (in $\mu\text{mol.l}^{-1}$):

0.341, 0.302, 0.504, 0.452, 0.309, 0.375, 0.479, 0.423, 0.311, 0.333.

Does the preparation influence the AST activity in blood serum of dairy cows?

Example 3:

Determine a weight change of ten rats after being subjected to a regimen of forced exercise.

Rat weights (in g) before the regimen of forced exercise:

136.2, 145.5, 131.7, 129.6, 130.9, 135.2, 140.5, 132.4, 138.7, 128.9

Rat weights (in g) after the regimen of forced exercise:

136.4, 145.0, 130.4, 128.1, 130.0, 134.6, 138.8, 131.6, 138.1, 127.8

Does the exercise cause any significant change in rat weight?

Make a protocol in Word (or Excel) that will contain (for each of examples):

- Calculated basic statistical characteristics: average, SD, SEM of each sample
- Calculated probability of F-test and t -test (what is appropriate for the example).
- Conclusion (answer)
- Column chart of samples data: AVGs + error bars (SEM)