Practice 8 – Parametric Tests in Excel

Example 1:

In stock of dairy cows the effect of a new veterinary preparation on the Mg level in blood serum of dairy cows has been monitored. In 10 dairy cows (control ones), to which the preparation was not applied, the following Mg levels in blood serum have been found (in $mmol^{-1}$):

0.82, 0.89, 0.82, 1.03, 0.91, 0.93, 0.90, 0.87, 0.93, 0.79.
In 10 dairy cows (test ones), to which the preparation was applied, the following Mg levels in blood serum have been found (in $mmol^{-1}$):

1.17, 0.97, 1.24, 0.99, 0.87, 1.20, 0,97, 0.95, 0.99, 0.96.

Does the preparation influence the Mg level in blood serum of dairy cows?

Example 2:

In an experiment, a stress effect of 50 km transport on cortisol level in blood plasma of pigs was studied. Blood samples were taken in a sample of 10 randomly selected pigs before the transport for monitored distance started. After the transport was over, the same pigs were sampled once more. Plasma cortisol concentrations found in pigs are presented in the following table:

No.	Before transport	After transport
Cortisol (ng/ml)		
1	88.9	98.5
2	90.6	132.6
3	98.6	101.6
4	75.3	144.2
5	102.3	135.6
6	65.9	165.3
7	84.3	152.0
8	101.6	154.3
9	100.2	179.1
10	87.6	168.3

Does the monitored 50 km transport influence the plasma cortisol level in pigs?

Example 3:

In a dairy cows stock the effect of two veterinary preparations on the level of triglycerides (TG) in blood serum of cows has been monitored. In 10 cows, to which the preparation No.1 was applied, the following TG levels in blood serum have been found (in mmol.l$^{-1)}$:

0.84, 0.78, 0.82, 1.03, 0.82, 0.93, 0.90, 0.87, 0.89, 0.93.

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

0.89, 0.93, 1.24, 0.98, 0.87, 1.20, 0.97, 0.96, 0.99, 0.95.

Did preparations differ in its influence on the variability of TG level in blood serum of dairy cows?

Type a protocol in Word that will contain (for each of examples):

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