

Summary

The present work was designed to study the effect of the parenteral administration of vitamin E and selenium in the transition period on health status, hematological and some selective metabolic profiles, in addition to electrolytes and acid-base balance in high producing dairy cows.

Twenty *Holstein-Friesian* multiparous cows between the 2nd and 4th lactation seasons were used in this study. The selected cows were basically divided into two equal groups relied on the body condition scoring (BCS):

(A) Cows of BCS less than 3.5 were further subdivided according to vit E and selenium administration into:

Group (I): consists of five cows, which administered neither vit E nor selenium

Group (II): consists of five cows, which administered vit E and Selenium.

(B) Cows of BCS more than 4 were further subdivided according to vit E and selenium administration into:

Group (III): consists of five cows which administered neither vit E nor selenium

Group (IV): consists of five cows which were administered vit E and selenium.

Selenium and vitamin E treatments administered approximately 21 days before the expected day of calving. Each cow in the treated groups (II and IV) received 50 ml intramuscular dose of **VIT.50+Se pro inj.**[®] Blood samples were taken at 21 days before the expected calving day, and at calving day, 5th DPP, and then every 10 days until the 45th day of lactation.

The results could be summarized as follows:

(A) Clinical examination of the animals:

◆ The clinical examination of different body systems revealed no apparent clinical abnormalities overtime of the experiment.

(B) Hemogram and leucogram:

◆ The packed cell volume percentages (PCV %), hemoglobin concentration of the blood and RBCs counts of treated groups (II and IV) were lower than those observed in control groups (I and III).

◆ The erythrocyte indices (MCV, MCH and MCHC), of treated groups (II and IV) were higher than those observed in control groups (I and III).

◆ The total leukocytic counts at the 25th, 35th and 45th DPP were significantly ($P < 0.05$) lower in treated thin cows (group II) than those in the control one (group I) while, there were significant ($P < 0.05$) increase in their values in treated fat cows (group IV) comparing with those in the control one (group III) at the same days.

◆ The neutrophilic counts significantly ($P < 0.05$) fluctuated between the four groups overtime of the experiment while lymphocytic counts were insignificantly lower in treated groups than those in the control ones except at the 45th DPP, there were significant ($P < 0.05$) reduction in their values in both treated groups comparing with those in the control ones.

◆ The monocytic counts significantly ($P < 0.05$) increased at the calving day only in both treated groups comparing with those in the control ones and after that, fluctuated insignificantly between all groups until the end of the study while, the basophils showed insignificant fluctuation in their counts between all groups over time of the experiment.

◆ The eosinophilic counts significantly fluctuated ($P < 0.05$) between groups at the 15th, 35th and 45th DPP.

(C) Vitamin E, Selenium and GSH-PX levels:

- ◆ Serum vitamin E levels showed a significant ($P < 0.05$) increase in serum vitamin E levels of both treated groups compared with those of the corresponding control groups at the 5th day post parturition. Also serum selenium levels showed a significant ($P < 0.05$) increase in both treated groups compared with those of the corresponding control groups at calving day and 5th DPP.
- ◆ GSH-PX activities showed a significant ($P < 0.05$) increase in both treated groups compared with those of the corresponding control groups from calving day until the 45th days post parturition.

(D) Blood biochemistry:

- ◆ Serum glucose levels in treated groups (group II & IV) were lower than those in control ones (group I & III). While total protein revealed insignificant fluctuation throughout the experiment except at the calving day there is a significant ($P < 0.05$) increase in the total protein values of treated thin cows when compared with that in the control ones.
- ◆ Triglycerides clarified that the levels of treated groups (II and IV) are significantly ($P < 0.05$) higher than those of the control ones (I and III) at calving day and overtime of the experiment except at the 25th and 45th DPP.
- ◆ Total cholesterol proved that the levels in treated groups (group II and IV) were insignificantly higher than those in control groups (group I and III) overtime of the experiment except at calving day, while NEFA concentrations were non-significantly lower in treated groups (group II and IV) than those in the control ones (group I and III) at calving day meanwhile, at the 5th DPP, there were significant differences ($P < 0.05$) recorded.

- ◆ Serum BHBA, GGTP and LDH activities clarified that, there were insignificant fluctuations in their values in most sampling times when comparing the treated groups (II and IV) with control ones (I and III).
- ◆ AST and CK activities of group (II) were lower than those in the control group (I) overtime of the experiment and the significant ($P<0.05$) lower activities were recorded in group (II) than those in group (I) at calving and at the 45th DPP. On the other side, in fat groups (III and IV) were fluctuating overtime of experiment.
- ◆ ALP activities showed insignificant fluctuation over time of the experiment with numerical reduction in both treated groups compared with the control groups in most sampling times.
- ◆ Blood serum calcium, inorganic phosphorus and magnesium levels showed insignificant fluctuation overtime of the experiment

(D) Electrolytes and acid-base balance:

- ◆ Serum sodium levels showed insignificant reduction in the levels of serum sodium in both treated groups (II and IV) comparing with those in the control ones (I and III) in most sampling times.
- ◆ Serum potassium and chloride levels levels clarified that there is an insignificant fluctuation in the potassium values over time of the experiment.
- ◆ The results of venous blood pH revealed that there were significant ($P<0.05$) increases in the pH values of the treated fat cows (GP IV) and the treated thin cows (GP II) compared with those of the control ones on calving day and 35th DPP. While, anion gap results revealed that anion gap levels almost were lower in treated groups (II and IV) comparing with those in control ones (I and III).