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## SUMMARY AND CONCLUSION

The present study was conducted to evaluate the effect of dietary supplementation of yeast culture (*Saccharomyces cerevisiae*) on some physiological, nutritional, and productive parameters of Suffolk x Ossimi crossbred sheep. Two experiments were performed in this regards at El-Gemmiza Experimental Station, Animal Production Research Institute (APRI), Agricultural Research Center (ARC), Ministry of Agriculture and the Department of Animal Production, Faculty of Agriculture, Minufiya University during the period from January to August 2005.

### **Experiment I:**

This experiment was performed to evaluate the influence of dietary supplementation of YC on nutrients digestibility, nitrogen balance and some rumen parameters. Nine Suffolk x Ossimi yearling lambs weighing on the average  $60.57 \pm 0.77$ kg and aged 14 months on the average were divided into three comparable groups according to their body weight (three for each): 1) control; fed the basal ration without any supplementation, 2) fed the control ration and supplemented with 2.5g/h/d yeast culture (YC) and 3) fed the control ration and supplemented with 5g YC/h/d. YC was added to some of the ground concentrate feed mixture of the basal diets. The basal ration composed of concentrates feed mixture: roughage (berseem + rice straw) (60:40).

### **Experiment II:**

This experiment aimed at investigating the effect of dietary supplementation of yeast culture (*S. cerevisiae*) on some reproductive traits, some blood constituents, thermo cardio-respiratory activities, milk yield, milk composition and lambs growth performance during the pre-weaning period (2 months). A total of 48 ewes of Suffolk x Ossimi ewes weighing on the average  $58.54 \pm 1.34$ kg being in their 2<sup>nd</sup> - 3<sup>rd</sup> parities and aged 3 – 4 years were divided into three comparable groups according to

their body weight (16 ewes each) and were fed the same feeding and treatments mentioned in Exp.1. Ewes were fed according to their body weight during the flushing period (2wks before breeding season), pregnancy and lactation periods (8 wks after lambing). Blood samples were collected at 0, 3, 6, 9, 12, 15, 18 and 21wk during gestation and biweekly intervals after lambing till 10wk and they were left to clot and clear serum was carefully separated and refrigerated until chemical analysis. Reproductive traits were recorded at lambing such as conception rate, fertility, lambing rate, fecundity, reproductive ability and mortality rate of lambs during the pre-weaning period. Rectal temperature, skin temperature, pulse rate and respiration rate were recorded biweekly intervals till the termination of trial. Milk yield and composition were recorded after 2 wk from lambing till 8wk from lactation. Body weight, total gain and daily gain were also recorded during the same period.

**Results could be summarized as follow:**

**Experiment I:**

- 1- Digestibility of all nutrients (DM, OM, CP, CF, EE and NFE) were higher with YC-supplemented groups than those of control group ( $P<0.01$ ).
- 2- The highest TDN was recorded for 5g YC-supplemented group followed by 2.5g YC-supplemented group and then control group ( $P<0.01$ ) being 71.05, 68.75 and 65.51, respectively. Digestible crude protein followed the same pattern.
- 3- Nitrogen intake was significantly higher for supplemented groups than those of control groups. Urinary nitrogen followed the same pattern. Fecal nitrogen followed an opposite trend for urinary nitrogen ( $P<0.01$ ).
- 4- Yeast culture improved nitrogen balance. NB as proportional of nitrogen intake or nitrogen digested was also higher in supplemented groups than control one ( $P<0.01$ ).

- 5- Ruminal pH was higher for all treatments before morning feeding then decreased at 3h–post-feeding. On the other hand, there were significant differences due to sampling time and the interaction between sampling time and treatments and insignificant differences among treatments.
- 6- Ruminal ammonia-N was lower in YC-supplemented groups than control group being 28.47 and 28.97 vs. 30.28 mg / 100 ml ( $P < 0.01$ ).
- 7- Total VFA was highest for 5 g YC-supplemented group followed by 2.5 g YC-supplemented group and then control group ( $P < 0.01$ ).
- 8- Total VFA had inversely relationship with ruminal pH.

### **Experiment II:**

- 1- Conception rate was higher in ewes supplemented with YC than that in control being 100 and 100 vs. 93.75%. Percentage of ewes lambed per ewes joined (fertility) was 100 for those supplemented with 5g YC, 93.75 % for those supplemented with 2.5g YC and the least 81.25% was found for the control group.
- 2- Percentage of lambs born in proportional to ewes joined and percentage of lambs weaned per ewe joined (reproductive ability) were higher in the YC-supplemented groups than the control group.
- 3- Ewe fed 5g YC recorded the lowest abortion percentage of followed by the 2.5g YC group while the control was least.
- 4- Serum total protein was higher in YC-supplemented groups than control; differences were non-significant during pregnancy. Serum total protein increased gradually during pregnancy to reach the peak at 15wk then decreased till lambing (21 wk).
- 5- During lactation, Serum total protein was higher in YC-supplemented groups than those of control group. It increased gradually till the 6<sup>th</sup> then decreased till the 10<sup>th</sup> wk of lactation.
- 6- Serum albumin during pregnancy was higher in YC-supplemented group than control ewes. Serum albumin decreased gradually till lambing.

- 7- Serum globulin increased gradually with the advancement of ewes pregnancy to reach the least value at lambing (21 wk); the highest value was achieved at (15<sup>th</sup> wk) of pregnancy ( $P<0.01$ ). Yeast culture supplementation resulted in higher serum globulin in supplemented group than the control group during lactation.
- 8- YC- supplementation had no significant effect on A/G ratio during pregnancy as well as the interaction between treatments and pregnancy periods.
- 9- Blood glucose was higher in YC-supplemented groups than those of control ewes being respectively 43.15, 42.33 and 40.05 mg /dl.
- 10- Ewes on 5g YC and control groups had higher cholesterol values than those on 2.5g YC group ( $P<0.01$ ).
- 11- Lowest blood urea concentration was achieved at lambing but differences among pregnancy period or lactation period were not significant. During pregnancy and lactation YC-supplemented groups had higher blood urea concentration than those of control group ( $P<0.01$ ).
- 12- YC supplemented groups during pregnancy and lactation had higher creatinine concentrations than those of control ewes ( $P<0.01$ ).
- 13- YC-supplemented groups had significantly higher ( $P<0.01$ ) GOT and GPT than those of control group. Blood GPT concentration was increased after lambing till the 6<sup>th</sup> wk of lactation then decreased gradually till the 10<sup>th</sup> wk ( $P<0.01$ ).
- 14- Rectal temperature was lower in the YC-supplemented groups as compared to the control group ( $P<0.01$ ). It gradually decreased to 16 wk after start and then increased gradually till the end ( $P<0.01$ ).
- 15- Skin temperature followed the same pattern of RT. Pulse rate and respiration rate were lower in the YC-supplemented groups than those of control group ( $P<0.01$ ).
- 16- Milk yield (g/h/d) (actual and 4% FCM) increased gradually to reach the peak at the 4<sup>th</sup> week of lactation then declined till the termination

(8<sup>th</sup> wk) ( $P < 0.01$ ). Highest milk yield was achieved with 5g YC-supplemented group followed by 2.5g YC-supplemented group and then control group ( $P < 0.01$ ).

- 17- Yeast culture supplementation improved milk yield (actual and 4% FCM) and milk composition (percentage and yield).
- 18- Lambs body weight increased gradually from lambing till weaning ( $P < 0.01$ ). Yeast culture supplementation led to an improvement of body weight as compared to control group.
- 19- Lambs daily gain for pre-weaning period increased gradually from lambing to weaning ( $P < 0.01$ ). Higher daily gain was reported with YC-supplemented groups than those of control group ( $P < 0.01$ ).

**From these results it could be concluded that:**

- 1- Yeast culture supplementation improved nutrients digestibility, nitrogen balance and rumen parameters; consequently, improved the nutritive value in terms of TDN and DCP. Generally it improved the digestion and metabolic mechanisms.
- 2- Reproductive traits, blood components as well as thermo-cardio-respiratory activities were positively affected by yeast culture supplementation.
- 3- Productive traits (milk yield and composition as well as lambs daily gain) seemed to be improved by the addition of yeast culture at the two tested levels (2.5 and 5g /h/d).

It could be recommended to use the YC supplementation to sheep ration at 2.5 or 5g/head/day in order to improve nutritive, physiological and productive characteristics.