USING OF MODERN TECHNIQUES IN ANIMAL FEEDING TO MAINTAIN THE PROFITABILITY OF THE SECTOR UNDER CLIMATE CHANGE CIRCUMSTANCES IN EGYPT

By

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B.Sc. Agric. Sc. (Animal Production), Ain Shams University, 2000

M.Sc. Agric. Sc. (Animal Breeding), Ain Shams University, 2006

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ABSTRACT

Waael Mohamed Salah El-Desokey. **Using of Modern Techniques in Animal Feeding to Maintain the Profitability of the Sector Under Climate Change Circumstances in Egypt. Unpublished Ph.D. Thesis, Department of Animal Production, Ain Shams University, 2019**

Fourteen fattened male Friesian crossbred calves were used to study the effect of ZAD® probiotic compound supplementation on calves' blood plasma parameters, rumen liquor parameters, fecal components, nutrients digestibility, growth performance, boneless meat, feed conversion ratio, price conversion ratio and production profitability.

Calves were divided into two groups (seven animals per each). Both group were fed a fixed diet based on body weight consisting of barley sprout, orange pulp silage, wheat germ and molasses. ZAD probiotic compound were used to treated group supplemented to feed by 10 ml/calve/day during fattening period (80 days).

Obtained results showed that:

1. Blood plasma total protein of fattening male Friesian crossbred calves were increased ($P<0.05$) in ZAD probiotic supplemented group compared with control group (6.45 vs. 5.96 g/dl, respectively).
2. Blood plasma globulin of fattening male Friesian crossbred calves were increased ($P<0.05$) in ZAD probiotic supplemented group compared with control group (2.39 vs. 1.82 g/dl, respectively).
3. Blood plasma albumin concentration of fattening male Friesian crossbred calves were tended to be slightly higher in control group compared with ZAD supplemented group (4.135 vs. 4.069 g/dl) respectively.
4. Blood plasma urea concentration of fattening male Friesian crossbred supplemented with ZAD probiotic tended to be higher ($P>.0.05$) than their in control group (26.56 vs. 23.43 mg/dl) respectively.

5. Blood plasma creatinine concentration of fattening male Friesian crossbred supplemented ration group with ZAD probiotic tended to be higher than their in control group (1.95 – 1.75 mg/dl) respectively.
6. Blood plasma aspartate aminotransferase (GOT/ AST) and blood plasma alanine aminotransferase (GPT/ALT), ZAD probiotic supplemented ration were not significantly affected on fattening calves' plasma AST and ALT concentrations. The present results of plasma AST and ALT in the control group were tended to be higher ($P>0.05$) than that supplemented with ZAD probiotic.
7. ZAD probiotic supplemented ration were not significantly ($p>0.05$) affected on fattening calves' rumenal ammonia nitrogen concentrations. However, in the present results of ruminal ammonia nitrogen in ZAD supplemented group tended to be higher than control group.
8. Rumen liquor pH of fattening male Friesian crossbred calves were increased ($P<0.05$) in control group compared with ZAD probiotic supplemented group (8.168 vs. 6.693) respectively.
9. Total volatile fatty acids within rumen liquor of fattening male Friesian crossbred calves were increased ($P<0.05$) in ZAD probiotic supplemented group compared with control group (9.080 vs. 6.433 mg equiv. /dL^{-1}) respectively.
10. Fattening male Friesian crossbred calves' fecal acid detergent fiber percent and fecal acid detergent lignin percent were decreased ($P<0.05$) in ZAD probiotic supplemented group (12.137 and 2.871, respectively) compared with control group (13.943 and 3.871, respectively).
11. NDF and ADF digestion coefficients percent of fattening male Friesian crossbred calves were increased ($P<0.05$) in ZAD probiotic supplemented group (42.85 and 54.01, respectively) compared with control group (25.18 and 37.68, respectively).

12. Initial and final weight of fattened male Friesian crossbred calves were higher ($P<0.05$) in control group (305.14 and 387.43 kg, respectively) compared with ZAD probiotic supplemented group (259.43 and 340.71 kg, respectively).
13. Total weight gain of fattening male Friesian crossbred calves tended to be higher ($P>0.05$) in ZAD probiotic supplemented group compared with control group (82.29 vs. 81.29, respectively).
14. Relative weight gain to initial weigh (i.e. (weight gain/initial weight)*100) of fattened male Friesian crossbred calves were higher ($P<0.05$) in ZAD probiotic supplemented group compared with control group (31.72% vs. 26.64%, respectively).
15. Average daily gain of fattening male Friesian crossbred calves during the entire fattened period (80 days) were higher ($P<0.05$) in ZAD probiotic supplemented group compared with control group (1.011 vs. 0.896 kg/day, respectively).
16. Total digestible nutrients intake of fattening male Friesian crossbred calves' were lower ($P<0.05$) in ZAD probiotic supplemented group compared with control group (3.31 vs. 4.58 kg/kg-WG, respectively).
17. Costs conversion ratio of fattening male Friesian crossbred calves tended to be lower ($P<0.05$) in ZAD probiotic supplemented group compared with control group (13.24 vs. 14.07 EGP/kg-WG, respectively).
18. ZAD probiotic supplementation demonstrated lower payback period (9.480), higher rate of return (10.549) and higher benefit cost ratio (1.105) compared with control group (12.664, 7.897 and 1.079) respectively.
19. ZAD probiotic supplementation increased economic efficiency and resistance when using 10% outflow increasing scenario within sensitivity analysis.

Keywords: Fattened Friesian crossbred, Barley sprout ZAD probiotic, Growth performance, Boneless meat, Conversion ratio, Economic efficiency, Sensitivity analysis

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