ABSTRACT

Shahera Mohamed Mahmoud El-Ganainy: Impact of Different Protein Sources on Puberty and Fertility ofGrowing Cattle Bulls.Unpublished Ph.D. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, 2013.

Fifteen Friesian male claves during pre-pubertal and post-pubertal period (the period from 8 to 15 month of age) withan average live body weight of 180±40 kg were randomly divided into three similar groups (5 animals each) to 1-Evaluate the effect of feeding different protein sources on bulls sexual development and reproductive function. 2- Study the relation between semen parameters and reproductive performance.

Growing Friesian bulls in all groups were fed on rations based on protein sources as follows: (control) cottonseed meal (CSM) + maize gluten feed (MGF), (2) soybean meal (SBM), (3) maize gluten meal (MGM). The overall objective of these experiments was to evaluate the effect of protein source that differ in degradability on sexual development, sperm production, semen quality, metabolic hormones triiodothyronine (T3) and testosterone concentrations.

Chemical composition of the experimental rations showed that CP content of MGM ration was higher than SBM and control ration (15.58, 15.21 and 14.09, respectively) also, rumen un-degradable protein percent was higher in MGM ration followed by SBM and then control ration.

The main result showed that average daily dry matter intake was 7.90, 7.55 and 7.45 kg/head for control, SBMand MGM, respectively. Blood plasma total protein, albumin, globulin, alkaline phosphates, acid phosphatase and aspartate aminotransferase were increased ($P>0.05$) in bulls fed on MGM ration. Creatinine concentration was higher ($P>0.05$) with bulls fed on SBM ration.

Meanwhile, there were insignificant decrease in seminal plasma total proteins and pH in MGM group.

Blood plasma T3 was significantly improved with bulls fed on control ration than MGM and SBM rations. In contrast, control ration showed lower (P>0.05) blood and seminal plasma testosterone concentration compared with other rations.Furthermore, semen parameters weren't significantly affected by source of protein. Average ejaculate volume and dead spermatozoa percentage were increased with SBM treatment, whereas, sperm-cell concentration was increased in MGM treatment, sperm wave motion was improved with control group. Otherwise, bulls fed on SBM ration showed higher percent of sperm DNA damage than the other rations.Moreover, bulls fed on control ration were higher in lymphocytes DNA damage.

Average of bodyweight gain and daily gain were insignificantly affected by protein source in ration. Growthperformance was improved with SBM group. In addition, body measurements were insignificantly (P>0.05) improved by bulls fed on maize gluten meal ration. However, bulls fed on SBM ration showed lower wither and hip height than other bulls. Furthermore, testicular measurements showed insignificant difference between treatments. Testicular volume was improved with bulls fed on MGM ration.

There was significant relationship between growth parameters and testicular measurements. However, results with young bulls did not show a useful relationship between testicular measurement and semen quality. In addition, blood lymphocytes DNA damage was insignificantly correlated with spermatozoa DNA damage.

Key Words: Friesian male claves, cottonseed meal, soybean meal, maize gluten meal, blood and seminal plasma constituents, semen quality, DNA damage, growth performance and testicular measurements.

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IMPACT OF DIETARY PROTEIN SOURCES ON PUBERTY AND FERTILITY OF GROWING CATTLE BULLS

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