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Effect of replacing urea-treated sugarcane bagasse with different proportions of barley on some blood biochemical traits of Arabian sheep

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Abstract

This study aimed to investigate the effect of substituting barley with urea-treated sugarcane bagasse at different ratios (0, 10, 20 and 30%) on blood biochemical parameters in the serum of Arabian lambs. The study included 16 Arabian lambs, purchased from local markets in Basra Governorate, at the age of 5-6 months, with an average weight of 25 ± 0.75 kg. Lambs were divided into four treatments (4 lambs per treatment). The treatments were: T1 the control (0% sugarcane bagasse treated with urea), T2 (10% sugarcane bagasse treated with urea), T3 (20% sugarcane bagasse treated with urea) and T4 (30% sugarcane bagasse treated with urea). The feeding period was 90 days including 14 days of adaptation. The results showed significant differences ($P \leq 0.05$) in total protein concentration (g/L) in favor of the treatments fed urea-treated sugarcane bagasse compared to the control treatment throughout the study period. There were significant differences ($P \leq 0.05$) in albumin concentration during the second month of the study in the treatments fed urea-treated sugarcane bagasse compared to the control treatment, while the differences were not significant in the first and third months of the study. There were significant differences ($P \leq 0.05$) in globulin concentration during the first and second months in favor of the treatments fed urea-treated sugarcane bagasse compared to the control treatment, while the differences were not significant in the third month. There was a significant increase ($P \leq 0.05$) in urea concentration (mmol/L) in the treatments fed urea-treated sugarcane bagasse compared to the control treatment. There was a significant increase ($P \leq 0.05$) in creatinine concentration (mmol/L) in the treatments fed urea-treated sugarcane bagasse compared to the control treatment. There was a significant increase ($P \leq 0.05$) in the concentration of liver enzymes AST and ALT (IU/L) in the treatments fed urea-treated sugarcane bagasse compared to the control treatment, but these levels remained within the normal range. It is concluded that replacing urea-treated sugarcane bagasse in lamb rations has no negative effect on the health status of lambs.

Keywords: Sugarcane bagasse, Arabian lambs, Urea treatment, biochemical profile

I. Introduction:

Improving livestock has become essential due to the increasing population growth and the high demand for animal protein. This will not be possible without providing feed in appropriate quantities and qualities, livestock is a key factor in achieving food security (Davis and White, 2020). Nutrition plays an important role in livestock production by improving production performance and quality. This is achieved through efficient nutrition programs to achieve the desired outcomes, while also considering the health aspect of the consumer (Beigh *et al.*, 2017).

Sheep play an important role in providing food security for millions of people, particularly in developing and underdeveloped countries, due to their vital role in providing high-quality nutritional resources. Their economic importance lies in their ability to convert roughages into high-value protein, thereby helping to reduce malnutrition and promote a sustainable dietary system (Broderick, 2018).