

**29. THE INFLUENCE OF TREATED AND UNTREATED COTTON SEED CAKE AS PROTEIN SUPPLEMENT ON UTILIZATION OF LOW QUALITY HAY BY SHEEP**

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A 5 x 5 latin square design experiment was conducted to evaluate the effect of feeding diets containing different levels of protein of different rumen degradability on the utilization of poor quality roughage. Five rams with body weight ranging from 33 to 40 kg were kept in metabolic cages and fed individually on five treatment rations. The rations were obtained by raising the crude protein in the basal diet (hay) from 4% CP to 7% CP using urea solution and further more to 10% CP and 13% CP using a calculated amount of either formaldehyde treated or untreated CSC. All animals received the 5 treatment diet twice a day at 0800h and 1500h in a change over manner at different periods of 18 days each. Dry matter digestibility, organic matter digestibility and faecal nitrogen were measured by total collection method. Urinary urea and plasma urea nitrogen were measured colorimetrically by Berthelot's reaction. Nitrogen content in feeds, faeces and urine were determined by Kjeldahl method according to AOAC (1990). The data were analyzed statistically by General linear model of SAS (1990) procedure. Significant increase ( $P < 0.05$ ) in dry matter intake (46.1 to 54.4 and 53.2 g/kgw<sup>0.75</sup>) was observed when the CP content of the basal diet was increased from 7% CP to 10% CP using untreated CSC. There was no significant ( $P < 0.05$ ) difference on DM intake g/kgw<sup>0.75</sup>) between 13% CP, 10% CP untreated and 13% CP formaldehyde treated. However raising the CP to 13% CP using formaldehyde treated CSC resulted to an increase ( $P < 0.05$ ) in DM intake (46.1, 48.1 and 53.3 g/kgw<sup>0.75</sup>) for 7%, 10% and 13% CP (formaldehyde treated) respectively. Dry matter digestibility was significantly ( $P < 0.05$ ) higher for 13% CP untreated than the other treatments (54.1%, 57.8%, 67.8%, 53.1% and 57.8%) for 7%, 10%, 13% (untreated) 10% and 13% (treated) CP respectively. At the same level of CP content in the diet, treatment with formaldehyde reduced the dry matter digestibility. Significantly

higher ( $P < 0.05$ ) urinary Nitrogen (UN) excretion, urinary urea-N and plasma urea-N were observed with elevation of protein in the diet for untreated cotton seed cake. Unsupplemented diet had significantly lower ( $P < 0.05$ ) urinary-N (1.7, 6.18, 9.51, 3.24, 5.56 g/d) for 7%, 10%, 13% CP (formaldehyde treated) respectively and lower urinary urea-N and Plasma urea-N concentration than the other diets. Formaldehyde treatment increased significantly ( $P < 0.05$ ) Faecal Nitrogen (FN) and significantly lowered ( $P < 0.05$ ) urinary-N, urinary urea-N and plasma urea-N concentrations. Treatment with formaldehyde significantly increased ( $P < 0.05$ ) 5.04, 7.48 g/d) the amount of Nitrogen retained (expressed as percentage of Nitrogen intake) for 10% and 13% CP respectively.