

## Effect of Supplementation of Hay with Noug Seed Cake (*Guizotia abyssinica*), Wheat Bran and Their Mixtures on Feed Utilization, Digestibility and Live Weight Change in Farta Sheep

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**Abstract :** This study was carried out with the objective of studying the response of Farta sheep in feed intake and live weight change when fed on hay supplemented with noug seed cake (NSC), wheat bran (WB), and their mixtures. The digestibility trial of 7 days and 90 days of feeding trial was conducted using 25 intact male Farta sheep with a mean initial live weight of  $16.83 \pm 0.169$  kg. The experimental animals were arranged randomly into five blocks based on the initial live weight, and the five treatments were assigned randomly to each animal in a block. Five dietary treatments used in the experiment comprised of grass hay fed ad libitum (T1), grass hay ad libitum + 300 g DM WB (T2), grass hay ad libitum + 300 g DM (67% WB: 33% NSC mixture) (T3), grass hay ad libitum + 300 g DM (67% NSC: 33% WB) (T4) and 300 g DM/head/day NSC (T5). Common salt and water were offered ad libitum. The supplements were offered twice daily at 0800 and 1600 hours. The experimental sheep were kept in individual pens. Supplementation of NSC, WB, and their mixtures significantly increased ( $p < 0.01$ ) the total dry matter (DM) (665.84-788 g/head/day) and ( $p < 0.001$ ) crude protein (CP) intake. Unsupplemented sheep consumed significantly higher ( $p < 0.01$ ) grass hay DM (540.5g/head/day) as compared to the supplemented treatments (365.8-488 g/h/d), except T2. Among supplemented sheep, T5 had significantly higher ( $p < 0.001$ ) CP intake (99.98 g/head/day) than the others (85.52-90.2 g/head/day). Supplementation significantly improved ( $p < 0.001$ ) the digestibility of CP (66.61-78.9%), but there was no significant effect ( $p > 0.05$ ) on DM, OM, NDF, and ADF digestibility between supplemented and control treatments. Very low CP digestibility (11.55%) observed in the basal diet (grass hay) used in this study indicated that feeding sole grass hay could not provide nutrients even for the maintenance requirement of growing sheep. Significant final and daily live weight gain ( $p < 0.001$ ) in the range of 70.11-82.44 g/head/day was observed in supplemented Farta sheep, but unsupplemented sheep lost weight by 9.11g/head/day. Numerically, among the supplemented treatments, sheep supplemented with a higher proportion of NSC in T4 (201 NSC + 99 g WB) gained more weight than the rest, though not statistically significant ( $p > 0.05$ ). The absence of statistical difference in daily body weight gain between all supplemented sheep indicated that the supplementation of NSC, WB, and their mixtures had similar potential to provide nutrients. Generally, supplementation of NSC, WB, and their mixtures to the basal grass hay diet improved feed conversion ratio, total DM intake, CP intake, and CP digestibility, and it also improved the growth performance with a similar trend for all supplemented Farta sheep over the control group. Therefore, from a biological point of view, to attain the required level of slaughter body weight within a short period of the growing program, sheep producer can use all the supplement types depending upon their local availability, but in the order of priority, T4, T5, T3, and T2, respectively. However, based on partial budget analysis, supplementation of 300 g DM/head /day NSC (T5) could be recommended as profitable for producers with no capital limitation, whereas T4 supplementation (201 g NSC + 99 WB DM/day) is recommended when there is capital scarcity.

**Keywords :** weight gain, supplement, Farta sheep, hay as basal diet

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