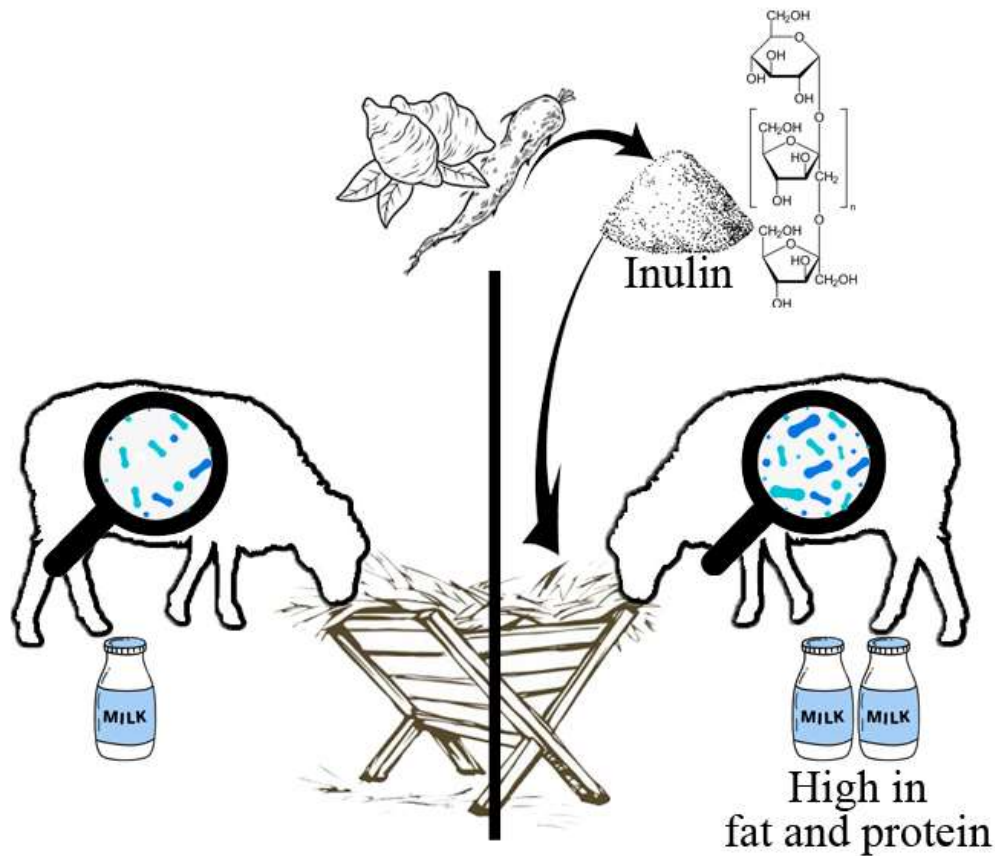


SUPPLEMENTARY FILE



The digestibility of nutrients was determined using the following equation (Marais 2000):

$$\text{DM digestibility (g kg}^{-1}\text{)} = 1000 (1 - M_h / M_f)$$

$$\text{Nutrient digestibility (g kg}^{-1}\text{)} = 1000 - 1000 ((M_h / M_f) (N_f / N_h))$$

Where M_h was marker concentration in the feed, M_f was marker concentration in the feces, N_h was concentration of the nutrient component in the feed and N_f was concentration of a nutrient component in the feces.

The fat corrected milk (FCM) was calculated according to the equation of Nguyen et al. (2018):
 $6\% \text{ FCM} = M (0.453 + 0.091F)$, where F was the fat percentage and M was the milk yield (g).

The energy corrected milk (ECM) was calculated according to the equation of Sjaunja et al. (1990) and Tajaddini et al. (2021):
 $\text{ECM (g/day)} = \text{milk production (g/day)} \times [38.3 \times \text{fat (g/kg)} + 24.2 \times \text{protein (g/kg)} + 16.54 \times \text{lactose (g/kg)} + 20.7] / 3140$.

Table S1. Ingredients of Basal Experimental Diet

Ingredients	% of Dietary Dry Matter
Alfalfa Hay	30
Wheat Straw	10
Barley Grain	20
Corn Grain	10
Soybean Meal	9
Wheat Bran	17.5
Salt	0.5
Mineral and Vitamin Permixon	2
Calcium Carbonate	1
<hr/>	
Chemical composition	
Crude Protein (%)	14.40
Metabolizable Energy (Mcal kg ⁻¹)	2.29
Neutral Detergent Fiber (%)	42.89
Acid Detergent Fiber (%)	30.30