ABSTRACT

FAIDHA. Role of Dietary Cation-Anion Di fference in Mineral Metabolism and Vagina Liquid’s pH to Seek for Change Offspring Sex Ratio of Garut Sheep. Under the supervision of TOTO TOHARMAT, IDAT GALIH PERMANA, and ARIEF BOEDIONO.

The objectives of the present experiment was to evaluate the effect of negative, neutral or positive dietary cation-anion difference (DCAD) on dry matter intake; mineral metabolism; mineral status and pH in blood, vagina mucous, and urin; and offspring sex ratio of Garut sheep. Rations with DCAD value of -28, -18, 0, +14, and +32 meq were offered to 15 ewes in a randomized complete block design. The ewes were grouped into: (I) ewes previously had twin female offsprings; (II) ewes previously had twin male offsprings; and (III) ewes previously had twin male and female offsprings.

The DCAD value affected dietary pH and dry matter intake. Dietary pH had significant correlation with DCAD (r=0.85). The DCAD value did not affect dry matter and K absorption, but significantly affected the absorption of total mineral (ash), Na, Cl, and S. Previous offspring sex ratio significantly affected drinking water consumption and S absorption but did not affect absorption of dry matter, ash, Na, K, and Cl.

The DCAD value and previous offspring sex ratio had no effect on blood pH, pCO2, pO2, HCO3, base, and plasma Na, K, Cl, Ca, and P concentrations indicating that there was homeostasis to maintain the physiological status of the body. However the DCAD of -28 meq led to low blood pH, pCO2, HCO3 and base at value of 7.06±0.53, 37.36±6.63 mmHg, 20.74±1.85 mmol/L, -2.53±2.42 mmol/L respectively; and plasma Na:K ratio at 18:1 indicating abnormal ration. Ewes were given DCAD of -28 meq had acidemia and metabolic acidosis.

The DCAD value of -18, 0, +14 and +32 meq resulted in the normal blood with blood pH varied from 7.36±0.03 to 7.40±0.02 and Na:K ratio closed to 20:1. Plasma Cl concentration was associated with plasma Na, but the concentration of Cl was lower than that of Na. Blood acidity had correlation neither to DCAD (r=0.37) nor dietary pH (r=0.04).

The DCAD value and previous offspring sex ratio had no effect on pH, Na, K, Cl, S, Ca, and P vagina fluid. The pH of vagina liquid had correlation to DCAD (r=0.46) and blood pH (r=0.64).

The DCAD value significantly influenced urinary pH and P, but had no effect on urinary Na, K, Cl, S, and Ca. The previous offspring sex ratio had no effect on urinary pH, Na, K, Cl, S, and Ca. The DCAD value of -28 and -18 meq resulted in the low acidity of urine at level of 5.73±0.20 dan 5.84±0.27, respectively. The DCAD value of 0, +14, dan +32 meq resulted in normal urinary pH.

The DCAD value and previous offspring sex ratio affected the total of fetus. The DCAD value of -28 meq resulted in low total fetus (0.67±0.58 fetuses) and that of 0 meq resulted in the highest total fetus (3.00±0.00 fetuses). The total fetus indicated a significant correlation to blood pH (r=0.55).