



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim
“Agricultural development within the rural-urban continuum”

Observations on Serum Copper Levels in three Omani Goat Breeds in Different Regions of Oman

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Abstract

Goats comprise an important source of animal food and income in Oman. Copper deficiency is an endemic problem in Omani livestock. To investigate prevalence of copper deficiency, serum samples were collected randomly from 184 Omani native goats of three breeds including 93 Jabal Akhdar (JA), 41 Batina (BAT) and 50 Dhofari (DOF). The animals, belonged to three geographical regions in Oman (Al-Jabal Al-Akhdar, Al-Batina and Dhofar), comprised 34 males and 150 females. The goat ages ranged between 3 months to 8 years. Goats were divided into five age groups: (Age1): 2 m-1 y (n=26), (Age2): >1-2 y (n=31), (Age3): >2-3 y (n=41), (Age4): >3-4 y (n=49) and (Age 5): > 4 y (n=37). JA goats were raised on partial range grazing plus stall supplementation while the BAT and DOF goats were kept and fed indoors. All animals were supplemented with extra Rhodes grass hay plus a variety of concentrates as well as mineralised salt licks. Means of serum Cu (mg/l) of all breeds ranged from low to deficient. The mean serum Cu (mg/l \pm SE) of JA, BAT and DOF were 0.48 ± 0.01 , 0.28 ± 0.04 and 0.46 ± 0.04 , respectively. There were highly significant ($p < 0.001$) breed differences, reflected in lower levels of serum Cu in the Bat compared to both JA and DOF. The JA and DOF goats had comparable levels. There was no significant effect ($p > 0.05$) of age or sex or their interaction on Cu levels in Omani goats. This study indicated that subclinical Cu deficiency in Omani goats may be prevalent in certain regions. Further studies are needed to investigate levels of other minerals and trace elements in goat serum and levels in rangeland and pasture. The economic effects and methods of alleviation of mineral deficiency in Omani goats need to be investigated.

Keywords: Batina, copper deficiency, Dofar, goat breeds, goats, Jabal Akhdar, Oman, plasma copper