

Mineral Status of Sheep and Goats Grazing in the Arid Rangelands of Northern Kenya

Lengarite, M.I.; Mbugua, P.N.; Gachuiri, C.K.; Kabuage, L.W.

Date: 2012

Abstract

A study was conducted in dry and wet season to determine macro and micro mineral status of growing sheep and goats in arid rangelands of northern Kenya. Forty four, 22 each of sheep and goats (1-2 year old), randomly purchased from three herds/flocks in study area, were sacrificed for whole liver and 12th right and left ribs. Homogenized liver samples pooled from all the lobes and defatted bone ash from whole left and right 12th ribs were used for determination of Ca, P, Mg, Cu, Fe, Zn and Mn status. Liver mineral analysis, showed that in sheep Cu (303 vs. 184 mg/kg DM), Zn (94.1 vs. 83 mg/kg DM) and Mn (13.2 vs. 7.5 mg/kg DM) were higher ($p<0.05$) in wet than dry season. In goats, season had no effect on Cu (274.28 vs. 236 mg/kg DM) and Fe (183 vs. 171 mg/kg DM), but had significant influence on Zn (102 vs. 126 mg/kg DM) and Mn (13.6 vs. 6.8 mg/kg DM). Sheep grazing in different pastures showed variation ($p<0.05$) in hepatic Zn, Cu and Mn contents, while goat varied ($p<0.05$) in hepatic Cu, Fe and Mn concentrations. Rib analysis indicated that season had significant effect ($p<0.05$) on sheep and goats DFF% ash. The rib Ca (359 vs. 362 mg/g), P (157 vs. 147 mg/g) and Mg (9.56 vs. 8.54 mg/g) contents of sheep was not influenced by season and grazing area ($p<0.05$), whereas goats rib Ca (360 vs. 326 mg/g), P (142 vs. 165 mg/g) content was affected by season and grazing area ($p<0.05$), but Mg showed no seasonal variation. In the wet season, liver and bone tissue of sheep and goats indicated adequate body status of Ca, Mg, Cu, Zn, Fe and Mn. However, in the dry season, sheep showed deficient levels of Zn, goats in Cu, while both species suffered from low liver Mn and rib Zn reserves. With the exception of P which was marginal in all seasons, mineral deficiencies affected animals mostly in the dry season. The liver and rib bone of sheep and goats has demonstrated seasonal fluctuation in tissue mineral reserve. Evaluation of specific minerals in different periods and body pools can be useful in the diagnosis of mineral status of animals. It can be concluded that, sheep and goats would benefit from P, Cu, Zn and Mn supplementation, particularly in the dry season.