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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 healthy sheep and goats (1-2 year old), randomly purchased from flocks/herds in Merille location were sacrificed for whole liver and 12th right and left ribs. Homogenized liver samples pooled from right, left, caudate and quadrate lobes and defatted bone ash from whole left and right 12th ribs were used for Ca, P, Mg, Cu, Fe, Zn and Mn analysis. Liver analysis, showed that in sheep, with the exception of Zn, Cu (303.1±19.3 mg/kg DM), Fe (213.1±8.2 mg/kg DM) and Mn (13.2±0.82 mg/kg DM) were significantly higher ($P<0.05$) in wet than dry season. Whereas in goats, season had no effect ($P>0.05$) on Cu (236.3±21.2 vs. 274.3±20.5 mg/kg DM) and Fe (183.6±7.32 vs.171.7±10.37 mg/kg DM), but had significant influence ($P<0.05$) on liver Zn (102.4±3.44 vs.126.8±9.2 mg/kg DM) and Mn (13.7±1.87 vs. 6.9±0.46 mg/kgDM).In comparison, sheep deposited more liver Cu and Fe in wet season, while goats liver showed higher levels of Zn and Cu in dry season. Rib analysis indicated that season had significant effect ($P<0.05$) on sheep and goats DFF% ash. The rib Ca (359.3±3.7, 362±7.8 mg/g), P (157±6.46, 147±7.32 mg/g) and Mg (9.6±0.51, 8.5±0.24 mg/g) contents of sheep was not influenced by season ($P>0.05$), whereas caprine rib Ca (360.5±4.2, 326±12.3 mg/g), P (142.7±9.64, 165.9±6.22 mg/g) content was affected by season ($P<0.05$), but Mg showed no seasonal variation. In both ovine and caprine rib Zn concentration was significantly influenced by season ($P<0.001$). In wet season, liver and bone tissues of sheep and goats indicated adequate body reserves of Cu, Zn, Fe and Mn. During the dry season, sheep and goats showed marginal to deficient levels of Cu and Zn and Mn. Small ruminants in the study area had adequate body reserves of Ca and Mg, but appear to suffer from marginal P bone reserves. In conclusion, sheep and goats in the study area would benefit from P, Cu, Zn and Mn supplementation, particularly in the dry season.

Key words: Macro and trace minerals, liver and bone, sheep and goats, northern Kenya