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Study on seasonal change of Cu in system of soil-grass-livestock on the meadow around Qinghai Lake

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Key words : zone of Qinghai Lake , meadow pasture , system of soil-grass-livestock , Cu , seasonal change

Introduction Seasonal change of Cu in the system of soil-grass-livestock (sheep) was studied on Meadow pasture around the Qinghai Lake . The results will provide the basic data to accelerate seasonal animal husbandry , use reasonably grassland , prevent Grassland degradation and increase the benefit of ecological animal production .

Materials and methods The samples of Soil forage , serum in sheep and wool were collected in April , July and October 2005 on Meadow around the Qinghai Lake , the samples were treated with traditional methods in the Lab . The objects were ten wethers in good condition . Content of Cu was determined in 180-80 polarized Hitachi Zeeman atomic absorption spectrophotometer . The data were treated with SPSS10.0 software by single-factor analysis of variance .

Results and discussion

Table 1 Change of Cu in the system of soil-grass-livestock in different seasons .

Season	Soil(mg/kg)	Pasture(mg/kg)	Serum(mg/L)	Pair (mg/kg)	Intake (mg/d)
Winter and spring	20.98±1.25 ^A	6.11±1.79 ^b	1.34±0.45 ^a	1.94±0.35 ^C	2.63±0.76 ^B
Summer	19.37±1.92 ^B	8.91±2.01 ^{Aa}	1.45±0.63 ^a	4.71±0.54 ^A	13.76±3.10 ^A
Autumn	14.62±1.56 ^C	3.77±2.15 ^{Bc}	1.09±0.22 ^a	3.75±1.14 ^B	3.60±2.05 ^B

From above table , as to zone around Qinghai Lake , in winter and spring , summer and autumn , Cu content in the soil was within the range of chestnut soil in China , however , this a little lower than the average content of the soil in Qinghai (21 mg / kg) . Therefore , the content in this area was suitable .

Cu is an essential element to the growth of pasture and livestock . Guang-hui Li , etc thought that the content of Cu above 5 mg / kg could maintain their normal growth , below 3~5mg/kg would be shortage . In our study , Cu content in pasture was normal in the spring and summer , but shortage in autumn around the Qinghai Lake .

Low Cu content could result in lack of Cu in an animal , and lead to many symptoms , such as Anemia , diarrhea , movement disorders and wool bleaching . Zhongchao Zheng found that the Cu requirements for sheep was 7~11mg/kg , but our results indicated that Cu content in pasture was below 6 mg / kg in the spring and autumn , the content couldn't meet the needs of the body .

The normal value of the serum Cu in sheep was from 0.7~1.3 mg/L . in our experiment , Cu level in serum of sheep was higher than the normal level in summer . The Cu level was in normal range in other seasons .

The Cu density in wool of healthy sheep was 3.68±0.74mg/kg . in this experiment , the Cu density in wool in winter and spring was lower than that in healthy sheep , so , Cu was shortage . The causes may be long wither , about 7 months .

Conclusion In the system of soil-grass-livestock around Qinghai Lake , The Cu content in the soil was suitable ; Cu content in pasture was normal in the spring and summer , but lack in autumn ; In the spring and autumn , daily intake for Cu couldn't meet the needs of the body ; The serum level in sheep was higher than normal levels in the summer , while , in winter , spring and autumn , the level was normal . Cu in wool was shortage in winter and spring .

Reference

Zongpin Liu .*Study of modern animal nutrition and metabolic diseases* . [M] . Beijing : Chemical Industry Press , 2003 .