

Research
Paper

Mineral status in Yak through hair tissue mineral analysis: Effect of age and sex

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ABSTRACT

Hair tissue mineral analysis in conjunction with other clinical data has been recognized as a very good nutritional screen for the treatment of human beings in abroad. In the present study, efforts have been made to compare the relative elemental status in hair of yaks in different sex and different ages group. Some important elements namely Ca, Mg, Cu, Fe, Zn, Mn and Co were studied by using atomic absorption spectrophotometer. Iron concentration (ppm) was found to be significantly higher ($p < 0.01$) in male (398.3 ± 42.7) than female (256.3 ± 37.3). Copper was found to be non detectable in sixteen animals. The calcium, magnesium, copper, zinc, cobalt, manganese and iron concentration (ppm) was found to be higher in the age group three years or less. Statistically, no significant difference was observed for any of the parameters except calcium, which was significantly higher ($p < 0.05$) in the age group three years or less.

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Key words : Element, Hair, Yak

INTRODUCTION

Deficiencies and imbalances of specific mineral elements in natural grasslands limit livestock production which can be confused with the other diseases or energy/protein deficiencies. Hair tissue mineral analysis has been found to be an excellent tool for monitoring general health, nutritional status and toxic metal exposure for both human and animal (Manson and Zlotkin, 1985). Hair tissue mineral analysis in conjunction with other clinical data has been recognized as a very good nutritional screen for the treatment of human beings in abroad. There are several reports that confirm hair tissue mineral analysis to be useful in evaluating a person's general nutritional status and health. Human hair has been accepted as an effective tissue for biological monitoring of toxic heavy metals by the U.S. Environmental Protection Agency, and used for this purpose throughout the world. Hair accumulates all the important trace elements and is a commonly available tissue which can be easily collected, stored and transported and if needed can easily be resampled. The use of hair has advantage over other tissues. Monitoring elements in the urine measures the component that is excreted. Blood on the other hand measures the component that is

absorbed and temporarily in circulation before it is excreted and/or sequestered in to storage depot. Where as, hair can be used as an indicator of whole body accumulation. For example, Muller (1996) found that scalp hair was a useful indicator of internal mercury exposure. Numerous other studies have also shown a relationship to mercury exposure as well as other minerals as measured in the hair with body accumulation from polluted areas as well as minerals in local soils (Gebel, 1998 ; Tommaseo, 1998).

However in India, so far hair has not been taken up seriously for monitoring the trace element status of animals. The data on normal distribution of trace elements in hair of different species is lacking. No literature is available on the mineral status in yak hair. In the present study, efforts have been made to compare the relative elemental status in hair of yaks of different age and sex as well as to have a baseline data on normal distribution of different elements in yak hair.

RESEARCH METHODOLOGY

Hair samples of twenty five apparently healthy yaks (10 male and 15 female) were collected from five different