

EVALUATION OF ZOOLOGICAL HOOFSTOCK SUPPLEMENTS

Nancy A Irlbeck, PhD

Denver Zoological Gardens, Denver CO and Department of Animal Sciences, Colorado State University, Fort Collins, CO 80521 USA

Abstract

Traditionally, U.S. zoos have fed two types of forage to exotic hoofstock species, primarily a legume (usually alfalfa, *Medicago sativa*) or grass hay(s). In addition to the forage, a grain supplement is added primarily as a carrier for vitamins and minerals, but also for supplemental energy. This has been the diet of choice for most ruminant and non-ruminant species with varying amounts and types of forage matched with grain to meet physiologic needs. Other than the occurrence of specialized versions of browser diets, that feeding regime has been the mainstay of U.S. zoos for hoofstock species. In addition to crude protein differences, the content of several macrominerals found in alfalfa and grass hays varies significantly. The recent occurrence of urinary calculi in a petting zoo pygmy goat brought that reality to mind at the Denver Zoo. Legume hays such as alfalfa have high levels of calcium in proportion to phosphorus, often a 4-6:1 (Ca:P ratio) in addition to higher crude protein. Likewise grass forages tend to have lower calcium levels in proportion to phosphorus, running from 1-2:1 (Ca:P ratio), and lower crude protein. Within the last few years, the equine industry has implemented a feeding strategy of feeding supplements according to forage type. Supplements lower in calcium and crude protein complement alfalfa, while supplements higher in calcium and crude protein improve the profile of grass hay-based diets more closely. Following this mindset, the nutrient profile of hoofstock supplements at the Denver Zoo have been modified to better match the needs of hoofstock species.