

A POSITIVE REPORT ON WEIGHT LOSS IN A CHIMPANZEE (*PAN TROGLODYTES*)

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Abstract

Obesity is one of the emerging health problems of human society. Also, in one of their closest relatives, the chimpanzee (*Pan troglodytes*), obesity is a substantial risk factor for disease and has a negative impact on lifespan. Obesity in primates has been associated with a diet high in starch and soluble sugars. When comparing the diet from the wild, where chimpanzees predominantly eat wild fruit, and other parts of trees and leaves, as well as prey, to diets in human care, these often contain cultivated fruits, which have been bred for a high total sugar and low crude fiber content. These diets are fed due to the fact that primates are known to be mainly frugivorous and therefore are provided a fruit-based diet. But unfortunately, these fruits are not representative for wild fruits. These would resemble cultivated vegetables in terms of composition. The consultant service of the Institute of Animal Nutrition was contacted to recommend a weight loss diet for an obese chimpanzee.

The body condition score (BCS) was obtained according to the guidelines of Reamer *et al.* When BCS was assessed, the bodyweight was estimated, as the animals could not be weighed. Individual feed items were weighed or given as numbers e.g., 1/2 apple. The animal was not fed individually, so the daily intake of the 36-year-old female chimpanzee was estimated by dividing the total ration for the group by the estimated total metabolic body weight of the group (body weight^{0.75}) and then calculated to the estimated body weight of the individual. Recommendations were made according to the NRC Requirements (NRC, 2003).

The BCS was estimated at 8/10. Having done this, the body weight was estimated to 85 kg (average weight female chimpanzee 60kg). The diet of the group consisted of many different feeding items, which were then put to categories of different groups: 60% vegetables, 18.4% processed starchy products, 14.5% non-leafy vegetables (like tomato, potato etc.), 6% fruits, 0.5% pellets, 0.3% dairy products and 0.3% nuts and seeds (all percentages of total diet in original weight). The energy intake was estimated to 19.8 MJ metabolizable energy (ME) per day. We decided to induce the weight loss by recommending a caloric intake of 11.9 MJ ME per day (recommendations for maintenance: 11.7 MJ). In addition, high fiber pellets (3%) were recommended to add and as much browse as possible. We also were asking to exchange non-leafy vegetables and fruits with leafy vegetables, stop feeding processed starchy products, dairy products, nuts, and seeds. For medical training or administration of oral medications a small amount of fruits was allowed (3%). In addition, the animal keepers were instructed to increase daily activity with different tools like puzzle feeders or scatter feeding. The recommended changes were implemented for the whole group over a longer period. The success was evident by a marked increase in activity.

Literature Cited

[NRC] National Research Council. (2003) Nutrient requirements of nonhuman primates. 2nd Edition. Washington, D.C.: National Academies Press.

Reamer LA, Neal Webb SJ, Jones R, Thiele E, Haller RL, Schapiro SJ, Lambeth SP, and Hanley PW (2020) Validation of utility of a body condition scoring system for chimpanzees (*Pan troglodytes*). *Am J Primatol* 82(10): e23188.