

A PILOT STUDY ON THE EFFECTS OF DIETARY RESISTANT STARCH ON SERUM CHOLESTEROL AND REGURGITATION AND REINGESTION IN ZOO GORILLAS

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Concerns over the incidence of heart disease and high rates of regurgitation and reingestion (R/R) prompted a pilot study on the effects of feeding dietary resistant starch to gorillas in zoos. Zoo gorillas have higher serum cholesterol than humans (Baitchman 2006). In humans, high cholesterol is associated with cardiovascular heart disease. Human rumination, a psychological disorder similar to gorilla R/R (Lukas 1999), decreases with increased fiber intake (Rast 1985) and is eliminated with satiety (Johnston 1993). Because resistant starch has been shown to lower cholesterol (Higgins 2004) and increase satiety (Raben 1994) in humans, we hypothesized that adding resistant starch to gorilla diets would decrease serum cholesterol and R/R in gorillas. Commercial biscuits were therefore mixed with resistant starch and re-baked. No other changes to the diet were made. Two male gorillas at Cleveland Metroparks Zoo, first medicated for heart disease in 2008, were fed fiber biscuits in 2007 and 2008. Serum collected in 1995 (baseline), 2008 (fiber), and 2009 (fiber + medication) was analyzed for cholesterol. Thirty hrs of behavioral data were collected on each gorilla in Jul-Nov each year from 2006-2008. Serum cholesterol was lower with fiber compared to baseline and even lower in 2009. Behavioral data, however, revealed an unexpected increase in R/R. This may be explained by the small increase in food volume, which in humans predicts increased rumination. Current research is aimed at reducing simple sugars and increasing volume of gorilla diets in a continuing effort to improve gorilla health and behavior in zoos.

Key words: abnormal, behavior, cardiac, health