

THE EFFECTS OF FOOD TYPE AND INTAKE LEVEL ON DIGESTA PASSAGE TIME AND DIGESTIBILITY IN JAPANESE MACAQUES

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Digestion is an important process for understanding the feeding ecology of animals. The objective of this study is to clarify the effects of food type and intake level on the three digestive features -- digesta passage time, digestibility and total gut fill -- in captive Japanese macaques (N=4). Here we designed four diet conditions (High-Large, High-Small, Low-Large and Low-Small) on high- or low-fiber commercial pellets in large or small amount, which simulate the food situations that wild Japanese macaques would face depending on the season and region. The results indicate that food type was associated with all of the three digestive features. Dry matter food intake level, on the other hand, was only correlated with total gut fill, and indigestible dry matter intake affected digesta passage time negatively. This study shows that when Japanese macaques consume high-fiber foods, they spend less time on digesting and digestibility becomes lower than eating low-fiber foods. We also found that Japanese macaques experience increases in total gut fill when they consume a large amount of food, and their gut expands when given in high-fiber foods. We argue that Japanese macaques may excrete difficult-to-digest food components quickly: they nevertheless buffer an increase in food intake by an increase in total gut fill. This study complies with the guideline ("Guide for the Care and Use of Laboratory Primates") of the Primate Research Institute, Kyoto University, and has been approved by the ethics committee of the institute.

Keywords: digesta passage time, digestibility, food type, food intake level