

Diet Analysis of Sympatric Colobine Monkeys from Bako National Park, Sarawak, Borneo

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ABSTRACT

Habitat quality and abundant of food resources are among the key factors influencing the continued existence of primates in the wild. Although much has been studied on primate habitats and their diets, little is known about the nutritional value of the colobines' foods. This study aimed to assess the dietary nutrient compositions of two sympatric colobine monkeys, *Trachypithecus cristatus* and *Nasalis larvatus*, in Bako National Park using proximate analysis of faecal, leaf and fruit samples of eight dominant tree species in Bako NP. Five nutrient parameters, namely crude protein, crude fat, crude fibre, ash, phosphorus, and energy content, were chosen to assess the nutritional demands of the monkeys in the wild. The faecal samples showed significantly higher percentage of crude fibre (27.58%) in *N. larvatus* compared to *T. cristatus*. In contrast, crude fat (8.52%), ash content (1.79%) and phosphorus (5.76 mg/g) were found to be significantly higher in the faecal samples of *T. cristatus* than in *N. larvatus*. The nutrient composition of leaves samples from the tree species consumed by *N. larvatus* and *T. cristatus* showed a significantly higher percentage of crude protein (14.56%) in *Barringtonia asiatica* (sea poison tree) and higher ash (13.70%) in *Morinda citrifolia* (Indian mulberry). Meanwhile, nutrient composition in fruit samples showed highest percentage of crude fibre (32.58%) and crude fat (12.35%) in *Calophyllum inophyllum* (Alexandrian laurel), whereas higher phosphorus (5.76%) and energy (24.26 kJ) were recorded in *Ceriops tagal* (Yellow mangrove). The higher crude fiber detected in *N. larvatus*' faecal samples compared to *T. cristatus* may indicates that *N. larvatus* experiences lower digestibility as they are incapable of completely digesting the tough leaves or fruits. This study provides useful information for the conservation and management of these primate species especially on their dietary requirements in captivity or in a new habitat.

Keywords: Food intake, nutrition, proboscis monkey, silvered langur

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INTRODUCTION

Primates are found predominantly across the tropical regions around the world. They play an integral role in the tropical ecosystems, for example as seed predators and dispersers (Haurez *et al.*, 2015). However, primates have different nutritional needs when selecting the types and quantities of food they consume (Felton *et al.*, 2009). Each species or individual's nutritional requirement depends on their body size, metabolism, daily behaviour, and type of digestive system (Parra, 1978; Milton, 1993). Adequate food and specific diet components are essential for the primate's survival within their habitat (Wiafe, 2015). Thus, understanding primate nutritional composition is crucial to assess species ecology, such as behaviour and

foraging strategies (Moges & Balakrishnan, 2014).

Primates' dietary selection is an important aspect that needs to be addressed effectively to conserve them in their natural habitat (Chapman *et al.*, 2020). Consequently, determining the nutritional value of the diet of wild primates can promote a better management of primates nutritional needs in captivity (Felton *et al.*, 2009). Faecal analyses can provide important nutritional information on primates' diet, especially in areas with high tourist visitation that may disrupt their natural feeding behaviour (McGrew *et al.*, 2009).

Bako National Park (Bako NP), situated about 24 km away from Kuching town, is Sarawak's most visited national park. This is