

FOOD TOUGHNESS AND CRANIODENTAL MORPHOLOGY IN THREE SYMPATRIC GUENON SPECIES IN KALINZU FOREST, UGANDA.

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Numerous attempts have been conducted to relate craniodental morphology and diet in primates. However, due to the lack of data on mechanical properties of foods consumed, most studies have relied on qualitative dietary classifications. To rigorously test hypotheses proposed by such previous studies, we quantitatively evaluate the toughness of foods consumed by three closely related sympatric guenons in Kalinzu Forest, Uganda (*Cercopithecus ascanius*, *C. lhoesti*, and *C. mitis*) and compare their craniodental morphology. Several patterns are predicted: in species that consume tougher diet; 1) postcanine tooth area is expected to be relatively larger; 2) mandibular corpus should be relatively more robust; 3) mandibular symphysis is assumed to be relatively more robust, and 4) mandibular ramus should be relatively taller. Field data on dietary toughness indicates that the average toughness is exceptionally higher in *C. lhoesti* among the three species. The food toughness is not significantly different between *C. lhoesti* and *C. mitis*. Morphological analysis shows that, as expected, *C. lhoesti* has significantly larger postcanine area than the other two. However, neither mandibular corpus robustness, mandibular symphysis robustness, nor mandibular ramus height is significantly greater in *C. lhoesti*. While the hypothesis regarding dental morphology is supported, other three hypotheses regarding the craniofacial morphology are rejected. This study suggests that, while variation in tooth morphology is explicable with reference to dietary toughness, the relationship between craniofacial morphology and diet is complex and that previously proposed functional hypotheses requires further reappraisal.

Keywords: diet, food toughness, ecomorphology, biomechanics, guenons