

WHY THE NUTRIENT COMPOSITION OF THE DIET OF BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS*) IS BEST ASSESSED ON AN ENERGY BASIS RATHER THAN A DRY MATTER BASIS

Amanda J. Ardente, DVM and Richard C. Hill, MA, VetMB, PhD, Dipl ACVIM, Dipl ACVN, MRCVS*

University of Florida College of Veterinary Medicine, Gainesville, FL, 32603, USA

Abstract

Dietary nutrients can be compared in three ways: ‘as fed’, or relative to either dry matter or energy content. Most published literature that evaluates the diet of bottlenose dolphins, *Tursiops truncatus*, compares nutrient content relative to dry matter, but dolphins consume a diet of whole fish and invertebrates that varies in fat and water content and energy density. The quantity of food that a dolphin must consume is determined by the amount of energy the animal requires to maintain its’ body condition. Thus, it is preferable to compare nutrient concentrations of dolphin diets relative to the metabolizable energy (ME) rather than dry matter. To illustrate this principle, data from three studies that compared the nutrient composition of fish species on a dry matter basis were reevaluated by comparing the nutrient content relative to metabolizable energy (ME) and on an ‘as fed’ basis.¹⁻³ ‘As fed’ energy densities differed markedly among fish species. As a consequence, differences between nutrient concentrations among fish species were either over- or underestimated on a dry matter basis. The most notable discrepancies were evident among important nutrients, such as crude protein, water, and sodium, with differences up to three fold higher relative to energy than relative to dry matter. Caretakers of managed dolphins must take account of differences in energy density when deciding how much to feed and also when assessing the nutrient composition of the diet. This may have important consequences for maintaining the health of managed dolphins.

Literature cited

1. Corse, M., M. Glick-Bauer, B. Saul, E. Dierenfeld. 1999. Nutrient composition of locally-obtained native fishes (St. Catherine’s Island Wildlife Survival Center, GA, USA) compared with fish commonly purchased for North American zee feeding programs. Proc. Am. Assoc. Zoo Vet., and Nutr. Adv. Gr. 3rd Conf. Pp. 127-135.
2. Crissey, S., P. McGill. 1994. Chapter 5: Diet and nutrition. In: Penguin Husbandry Manual. Amer. Assoc. of Zoos and Aquar. Pp. 1-19.
3. Slifka, K., R. Wells, A. Ardente, S. Crissey. 2013. Comparative diet analysis of fish species commonly consumed by managed and free-ranging bottlenose dolphins (*Tursiops truncatus*). The Internet J. of Vet. Med. 10.