

Evaluation of the Nutritional Adequacy of Three Diets Fed to the Black-footed Ferrets (*Mustela nigripes*) at the Metro Toronto Zoo

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Previous work at the Metro Toronto Zoo (Oyarzun et al., 1995) has found that the nutrient concentration in the Metro Toronto Zoo (MTZ) diet fed to the SSP Black-footed ferrets {BFF, *Mustela nigripes*) met or greatly exceeded the daily recommendations established for mink (NRC, 1982) as well as nutrient levels reported in the BFF natural diet (Dierenfeld & McGuire, 1989). The MTZ diet fed to BFF is a modification of the original diet developed at the Sybille Wildlife Research Centre and includes a variety of ingredients such as commercial mink pellets, ground rabbit carcass, blood meal and supplements. However, the use of the commercial mink pellets, included as the main ingredient of the BFF diet seemed to be the source of an excess of certain nutrients, particularly polyunsaturated fatty acids (PUFA's) and minerals.

At the MTZ the BFF's on exhibit (animals not in the SSP) have been fed a diet consisting of a MTZ carnivore mix plus live mice. The main objective of this study was to determine the chemical composition and digestibility of three diets fed to BFF at the MTZ including the regular MTZ gruel mix (G), a carnivore mix (CM), and mice (M). The study was conducted between (October and November, 1996 using 7 adult male BFF). Animals were housed individually for fecal collection and were fed weighed amounts of the experimental diets at different times. Feed was offered according to the animals body mass {BM} and represented approximately 3% of their BM (dry matter basis). A completely randomized design repeated in time was used. Lighting was provided daily by natural daylight and fluorescent lighting. Animals were weighed at the beginning and at the end of each trial to assess body mass changes. For the digestion trials, animals were subjected to an adaptation period of approximately 7 days followed by a fecal collection period of 7 days. The results of the experiment are given in Table 1.

Table 1: Chemical Analysis and Digestion Coefficients (%) of the Three Experimental Diets Fed to Black-footed Ferrets.

Analysis	MTZ Mink Gruel			MTZ Carnivore Mix			Whole Mice		
	As is basis	DM basis	Dig. Coeff	As is basis	DM basis	Dig. Coeff	As is basis	DM basis	Dig. Coeff
Dry Matter %	37.4	-	62.3 ^a	30.3	-	73.6 ^b	33.7	-	69.1 ^b
Crude Protein %	17.4	46.5	81.3 ^a	23.4	77.2	93.9 ^b	17.4	51.6	76.4 ^a
Crude Fat %	6.6	17.7	97.5	5.3	17.5	96.8	6.4	19.0	96.8
Fiber %	1.0	2.7	-	0.2	0.7	-	0.3	0.9	-
Ash %	3.4	9.1	-	1.4	4.6	-	2.9	8.6	-
Gross Energy kcal/g	2.00	5.35	88.9 ^a	1.75	5.79	94.6 ^b	2.04	6.05	93.4 ^b

^{a,b}-digestibility values in rows with different superscripts are significantly different (P<0.05).

Statistical differences (p<0.05) in the digestion coefficients were found among the experimental diets. The digestible energy values for the G, CM and M diets were 4.76 kcal/g, 5.47 kcal/g and

5.65 kcal/g, respectively and were higher than the NRC recommended requirements for mink (NRC, 1982) for maintenance, growth and lactation. Differences in the digestibility coefficients were found for the protein component of the diet with the CM showing the highest coefficient (93.9 %) while the M diet showed a coefficient of 76.4%. The G and CM diets seemed to be adequate for providing the protein needs of the BFF. The M diet failed to meet the estimated requirements for protein. The fat levels of the three diets were similar and no differences in the digestion coefficients were observed. Based on the results of this experiment, a simpler diet such as CM might be an appropriate alternative to the complex BFF standard SSP diet.

REFERENCES

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