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CALORIC AND TOTAL LIPID CONTENTS IN ADULT MALE *Holochilus brasiliensis* (Rodentia: Cricetidae)

CONTENIDO CALORICO Y DE LIPIDOS TOTALES EN MACHOS ADULTOS DE *Holochilus brasiliensis* (Rodentia: Cricetidae)

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The study of bioenergetic aspects of tropical mammals is necessary since energy is an important part of ecological knowledge. Comparisons between tropical and temperate organisms will contribute to the testing and further understanding of energy allocation and of life histories.

Energetic information is available for few neotropical species (Fergusson 1981 for 09 Dasypus sabanicola), but little is known for rodents (Ojasti 1978, for *Hydrochoerus hydrochaeris*), the most diverse group of tropical mammals. Judd et. al. (1978) report fat contents in a subtropical population of *Peromyscus leucopus*. Thus, the objective of the study was to determine energy and lipid contents of male adult *Holochilus brasiliensis,* a cricetid rodent of lowlands in South America and considered a pest in Venezuelan rice fields (Cartaya and Aguilera 1985).

We processed nine male adults of *Holochilus brasiliensis*; the age criteria used was that of Candellet (1984): 191-215 g and 175-200 mm.

Rodents were collected in a 7.5 ha grid located within a rice field, 15 Km south of Calabozo, in the Llanos of Guárico, Venezuela, between February 15 and March 25, 1984. Traps were placed in a grid of 10 lines spaced about 50 m apart, with 10 traps per line spaced 15 m apart. Lines corresponded to the dikes between rice plots which are elevated strips of land about 2 m wide. One National (48 x 16 x 16 cm) trap was placed in each station and baited with oats and sardines.

The animals captured were transported to the laboratory where they were sexed, weighed, measured, and immediately sacrificed and kept frozen until processed.

The Goldfisch method (Horowitz 1975) was used to determine total lipid contents. Calorimetric measurements were determined using Paine's (1971) method, by means of a Parr Adiabatic Calorimeter, Model 1242.

The body length and body weight show little variability, but both the caloric content per gram of dry weight and the contents of lipids are highly variable (Table 1), even for animals living in a very homogeneous environment as provided by a rice field. The high variability of energy and lipid contents is suprising because it seems higher than in temperate rodents from natural heterogeneous habitats (e.g., Fleharty et al., 1973). although we could not conduct statistical tests because we do not have access to the original data for the temperate rodents. The caloric contents, both in dry and fresh weights, are among the highest

TABLE 1: Body composition and caloric contents of nine male adult *Holochilus brasiliensis* from Calabozo. Means, standard deviations, and coefficients of variation are presented for all variables.

Variable	Mean	Standard deviation	Coefficient of variation (%)
Longitude (mm)	184.2	5.9	3.2
Fresh weight (g)	206.4	13.7	6.6
Dry weight (g)	67.2	5.3	7.9
Ash free weight (g)	44.0	5.7	12.9
Caloric content (Kcal/g)			
Fresh	1.81	0.23	13.0
Dry	5.54	0.59	10.6
Ash free	8.47	0.41	4.9
Total lipid content (%g/g wt)			
Fresh	4.59	1.74	37.9
Dry	14.05	5.22	37.2
Ash free	21.08	6.77	37.1
Inorganic substances			
Weight	23.26	3.86	16.6
Percent	11.45	1.93	16.9

mean values found in other rodents (Table 2). As expected, part of the variability might be a consequence of the variability in lipid contents, given that there was a correlation between caloric content and lipid contents ($r = 0.8848$, $p < 0.05$, $df = 7$).

TABLE 2. Caloric values for different rodents species for both fresh and dry weights, expressed in Kcal/g.

Species	Fresh weight	Dry weight	Source
Microtus pennsylvanicus	1.40	4.65	Golley (1961)
Mus musculus	1.70	5.67	Golley (1961)
Peromyscus polionotus	1.94	—	Davenport (1960, cit. in Fleharty et al, 1973)
Oryzomys palustris	1.90	5.84	Sharp (1962), cit. in Fleharty et al, 1973)
Microtus arvalis	1.46	4.85	Górecki (1965)
Reithrodontomys megalotis	1.65	5.12	Fleharty et al (1973)
Peromyscus maniculatus	1.61	5.09	Fleharty et al (1973)
Sigmodon hispidus	1.74	5.20	Fleharty et al (1973)
Microtus ochrogaster	1.42	4.96	Fleharty et al (1973)
Perognathus parvus	1.54	—	Schreiber (1975)
Dipodomys ordii	1.39	—	Schreiber (1975)
Clethrionomys gapperi	1.69	5.74	Bergeron (1976)
Holochilus brasiliensis	1.81	5.54	Weir and Vivas, this study
Hydrochoerus hydrochaeris			
good condition	1.49		Ojasti, (1978)
fair condition	1.13		Ojasti, (1978)

Rice is grown extensively throughout the Guárico River Irrigating System during the dry season, which allows *H. brasiliensis* to accumulate fat. However, primary productivity is higher in the llanos during the rainy season (San José and Medina 1976), but weeds and monocots are the dominant plant species, which are not as palatable nor nutritious for these rodents as is rice (Martino 1985). Thus, we would predict that energy and lipid contents might be lower in these rodents in the rainy season, when rice is not as available because it is only grown in smaller areas only for seed. Fergusson (1981) found a decrease in caloric and lipid contents in the rainy season, associated with a lower availability of resources in that season, when the savanna is inundated, but *D. sabanicola* is a very different animal and *H. brasiliensis* may behave differently.

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