

## Biochemical constituents of the seminal plasma of agoutis (*Dasyprocta leporina*) collected during the dry and rainy periods of a semiarid region

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### 1. INTRODUCTION

The knowledge of how environmental variables can influence the reproductive aspects of wild species is of fundamental importance for the development of adequate strategies for their management and conservation. Among the reproductive aspects, understanding the biochemical composition of seminal plasma helps on the development of assisted reproductive techniques that safeguard the sperm of a given species, like the agouti (*Dasyprocta leporina* Linnaeus, 1758). Therefore, we aim to describe the organic and inorganic biochemical constituents present in the seminal plasma of agouti, analyzed during the peak of the dry and the rainy periods of a semiarid region.

### 2. MATERIAL AND METHODS

The seminal plasma of six adult males was collected, through electroejaculation, during the peaks of the dry (September, October and November 2019) and rainy (February, March and April 2020) periods of the caatinga biome. Seminal plasma was analyzed for the presence of organic (total protein, albumin, cholesterol, triglycerides, fructose and glucose) and inorganic (phosphorus, magnesium, calcium, iron, chloride, sodium and potassium) biochemical components using commercial biochemical kits. The values obtained were correlated with the climatic variables of the studied environment.



6 male agouti



biochemical kits



spectrophotometer

### 3. RESULTS AND DISCUSSION

Data were expressed as the mean and standard error. To assess potential seasonal differences on seminal plasma biochemical parameters and thermal environment, a one-way ANOVA was performed using the PROC GLM of SAS. Spearman's correlation test was applied to determine associations among studied variables. Results are expressed at the tables 1-3.

### 3. RESULTS AND DISCUSSION

Table 01. Mean, median and variation of organic biochemical constituents of the seminal plasma of agouti (n=6) collected during the dry and rainy period of a semiarid region.

Biochemical Components	Dry period	Rainy Period
	Mean ( $\pm$ SEM)	Mean ( $\pm$ SEM)
Total Proteins	2.98 $\pm$ 0.82	1.90 $\pm$ 0.62
Albumin	5.43 $\pm$ 1.21	6.64 $\pm$ 2.31
Cholesterol	119.91 $\pm$ 21.61	125.16 $\pm$ 34.35
Triglycerides	100.11 $\pm$ 34.45	282.04 $\pm$ 83.58
Fructose	29.66 $\pm$ 7.162	26.92 $\pm$ 8.08
Glucose	88.24 $\pm$ 10.32	26.27 $\pm$ 9.84

Table 02. Mean, median and variation of inorganic biochemical constituents of agouti seminal plasma (n=6) collected during the dry and rainy period of a semiarid region.

Biochemical Components	Dry period	Rainy Period
	Mean ( $\pm$ SEM)	Mean ( $\pm$ SEM)
Phosphor	66.40 $\pm$ 17.64	3.67 $\pm$ 0.59
Magnesium	4.70 $\pm$ 0.41	4.24 $\pm$ 0.38
Calcium	8.85 $\pm$ 1.73	12.47 $\pm$ 1.85
Iron	601.76 $\pm$ 203.05	620.63 $\pm$ 266.33
Chlorides	43.04 $\pm$ 8.28	201.40 $\pm$ 36.99
Sodium	158.60 $\pm$ 9.39	267.42 $\pm$ 112.94
Potassium	92.67 $\pm$ 8.45	19.68 $\pm$ 5.61

Table 03. Correlations (r) between biochemical constituents of agouti seminal plasma and climatic variables.

Climate Variables	Biochemical Components			
	Glucose	Chlorides	Phosphor	Potassium
Total Rain	-0.69 P= 0.013	0.83 P < 0.001	-0.82 P < 0.01	-0.79 P= 0.01
Global Radiation	0.78 P < 0.01	-0.64 P < 0.01	0.81 P < 0.01	n.s
Air temperature	0.74 P < 0.01	-0.54 P < 0.01	0.80 P < 0.01	n.s
Humidity	-0.67 P= 0.016	0.68 P= 0.014	-0.72 P < 0.01	n.s
Wind Speed	0.72 P < 0.01	-0.71 P < 0.01	0.77 P < 0.01	n.s

### 4. CONCLUSION

Environmental variables can significantly influence seminal plasma composition in agoutis, and the concentration of some biochemical components varies between different climatic periods of a semiarid region. We emphasize that this is the first extensive description of the biochemical composition of seminal plasma in *Dasyprocta leporina*, thus contributing for the knowledge related to reproductive physiology of the species.