411- “Contrasted radiographic study on digestive system of captive Green-beak toucans (*Ramphastos dicolorus)”*

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Abstract: Toucans are taxonomically found on Piciform order, and along to aracaris, they are Ramphastidae family. Contrasted radiographic exams should realized to avaluate size, form or positioning on a organ, in spite to neighbor organs so can be evaluated thickness and status of hollow organs, procedure indicated to dysphagia, regurgitation, radio transparent foreign bodies, masses, esophagic dysfunctions, vomit, diarrhea, obstructions and displacements. There were realized Gastro-intestinal transit radiographs in six Green-Beak Toucan (Ramphastus dicolorus), adults with ages between 1 to 4 years old, both sex. At the present study, we used the average dose of 1,8 ml of 100% barium sulfate per animal, obtaining full filling of esophagus, pro-ventrilocus and ventrilocus right after administration. Fiiling of intestines and cloaca ocurred progressively later. Complete emptiness occured, at average, 210 minutes later. Contrasted exam of digestive system of Ramphastus dicolorus, comparing to others birds species and dog, does not present great variation on total time of execution, efficacy and coast.

keywords: radiographic exam; green-beak toucan, Ramphastus dicolorus

Introduction: Toucans are toxonomically found on Piciform order, and along to Aracaris forms family Ramphastidae. (Sick 1997). Among all neotropical piciform species, ramphastidies are the most common on captive, and for that reason, gather most of studies. About morphophisiological aspects, toucans measures between 40 to 66 centimeter (cm) long, and weights from 125 grams (g) to 600g.. The beak is long and colorfu. The intestines of toucouns are relatively short, adapted to its fructuous feeding habits, fast intestinal transit, results in voluminous feces. They don´t have craws or cecum, biliary vesicle is elongated and spleen is round (Sick 1997). Cardiac frequency varies from 130 to 165 beats per minute (bpm) and respiratory frequency between 15 to 45 movements per minute (mpm). Life expectance is about 15 to 25 years (Cubas 2006). The use of ultra-sound examination for this matter is problematical, due to air sacs (Rupley 1999). It leads us into use of other diagnostic tools, as radiographic views thru gastrointestinal transit (GIT). GIT in birds is an excellent diagnostic tool in spite of little natural contrasts in cavity (Rupley 1999). It can be used to evaluate size, shape and position of an organ. That way is possible to outline neighbor structures, thickness and health of hollow structures, evaluate function (Hudson et al. 2003), as in dysphagya, regurgitation, foreign bodies in coelom, masses, esophagian dysfunction, vomit, diarrhea, obstructions and displacements (Han & Hurd 2007).

Materials and methods: there were tested six green-beak toucan (*Ramphastos dicolorus)* to GIT. They were all adult , four male, two female, ages between 1 to 4 years-old. All birds belong to Municipal Zoo of São Bernardo do Campo, São Paulo, Brazil, and sheltered by the same handling system over 180 days. All animals were clinically examined and considered healthy. Average weight was 350 g. All radiographic tests were performed in the morning, with fasting time around eight to 12 hours. Through physical restraining, radiographic contrast, barium sulfate 100% (Bariogel©) at 5 milliliter per kilogram (ml/kg), were gave by esophagic probe directly to anterior segment of esophagus. The projections used for the tests: lateral left-to-right and ventral-dorsal, without Bucky table. Parameters used: 50/55 kV, 0,025 seconds of exposure and 100 mA. animal were exposed to shots 5 minutes before the administration of contrast, right after it, five, ten, 20, 30, 45, 70, 85, 120, 180 and 240 minutes after. All projections suffered individual evaluation.

Results: At this study, we used an average dose of 1,8 ml barium sulfate 100% per animal, obtaining complete fulfilling of esophagus, pro-ventricle an ventricle right after administration. Intestines and cloaca were fulfilled in sequence. Complete emptying occurred 210 minutes later at most animals. The table of contents shows time of fulfilling and emptying in each anatomical structure of gastrointestinal tract.

Total fulfilling time (min)					
Animal	Esophagus	Pro-ventricle	Ventricle	Intestines	Cloaca
247328	1	1	1	30	45
R00467	1	1	1	20	30
294168	1	1	1	20	30
294950	1	1	1	30	45
301069	1	1	1	30	30
302393	1	1	1	20	45
Average	1	1	1	25	37,5
Standart desviation	0	0	0	5,48	8,21

Total emptying time (min)					
Animal	Esophagus	Pro-ventricle	Ventricle	Intestines	Cloaca
247328	1	5	45	240	240
R00467	1	5	30	120	180
294168	1	20	85	240	240
294950	1	10	70	85	120
301069	1	5	20	240	240
302393	1	180	180	240	240
Average	1	37,5	61,66	194,16	210
Standart desviation	0	63,95	58,36	71,86	50,20

Discussion and conclusions: problems on managing and increase on population of captive *Ramphastus dicolorus* have been the most important factors on rising number cases of diseases. Among all, those that affects digestive system are most common, this justifies search for alternative and complimentary diagnostic tools. Contrast radiographies of *Ramphastus dicolorus*, in comparison with other birds and dogs, does not show great variation about time of execution, efficacy and cost. This study is set to be a data base for future studies and diagnostics, although in spite of few animals used, it shouldn´t be used as standard data for *Ramphastus dicolorus.*

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