

TOXILATIN



MERCURY ANALYSIS IN HAIR OF FREE-RANGING JAGUARS (Panthera onca) IN THE PANTANAL, BRAZIL

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INTRODUCTION

Mercury emissions from upstream golden mines in Pantanal (Brazil) have enormous potential for environmental impacts and wildlife health risks. Furthermore it is difficult to monitor such activities. Jaguars (*Panthera onca*) are broadly distributed apex predators, and recognized as a sentinel species. This feline possesses vital functions correlated to environmental factors, useful to detect environmental changes provoked by human activities, allowing evaluations of the ecosystem integrity. This research has the objective to evaluate the levels of mercury in hair collected from jaguars captured in conservation projects in Brazil.

METHODS

In 2013, nine jaguars were captured in two different areas; 5 from northern and 4 from southern Pantanal. During the procedures, samples of hair were collected from different parts of the animals body to evaluate the level of mercury. The hair samples were stored in plastic bags at field for posterior laboratory analyses. Mercury analysis was done by atomic fluorescence spectrometry with chemical vapor generation. The analyses were performed in triplicates. The accuracy of the method was evaluated by the analysis of Certified Reference Materials from human hair (NCS ZC 81002b), and these were bought from NCS (China National Analysis Center, China). Agreements of the concentrations obtained in the analysis with the certified values were made according to the t-test for a confidence level of 95%. The relative standard deviation is less than 10% indicating the adequate precision of this method.

RESULTS & DISCUSSION

There are not baseline values to support toxicity levels of mercury in hair of jaguars. In Northern Pantanal we found a range of 26.1 ± 5.1 to 2010.4 ± 150.5 (ng Hg g-1) and in Southern Pantanal 11.3 ± 2.4 to 70.3 ± 7.2 (ng Hg g-1). Based on the adverse developmental outcomes of mercury toxicity these specific results are of concern. Regionally, higher concentrations of mercury were observed in the endangered population of Northern Pantanal jaguars and mirrored patterns observed in human bio-monitoring studies of golden mine workers.

CONCLUSION

The analysis has broader implications in relationship to human and ecosystem health, with the jaguar being an important part of the complex Pantanal ecosystem. This is the first evaluation of mercury contents in jaguar's hair, to quantify the impacts of human activities on the health of this apex predator.

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