Molecular identification of *Aspergillus* isolates from Magellanic penguins

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**PURPOSE**

Aspergillosis is an important disease in marine birds and has a mortality rate of 50% in Magellanic penguins (*Spheniscus magellanicus*) in captivity. Molecular biology allows the precise identification of *Aspergillus* to species level, which is important since cryptic species may show differences in their virulence attributes and in their antifungal susceptibility. This work aimed to perform molecular identification and the itraconazole susceptibility profile of *Aspergillus* clinical isolates collected from Magellanic penguins with proven aspergillosis.

**METHODS**

Clinical isolates of proven aspergillosis cases in Magellanic penguins from Marine Animal Recovery Center, Rio Grande, RS, Brazil, 2011 - 2018

Classification according to macro- and micromorphology

Fungal collection

*Aspergillus* section *Fumigati*

PCR

\(\beta\)-tubulin: \(\beta\)tub 1 and \(\beta\)tub 2

Calmodulin: cmd 5 and cmd 6

Itraconazole susceptibility tests

Itraconazole concentrations range: 0.0313 to 16\(\mu g/ml\)

Incubation: 48 h 37\(^\circ\)C \(\rightarrow\) visual reading

MIC \(>2\mu g/ml\)

100% inhibition

Resistance

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**RESULTS**

| 19 isolates of *Aspergillus* section *Fumigati* |
| All isolates were identified as *Aspergillus fumigatus sensu stricto* |

**DISCUSSION**

*A. fumigatus sensu stricto* was identified as the etiologic agent of all aspergillosis cases from the analyzed penguins. Since fungal colonies are commonly found in air sacs from penguins with aspergillosis, they probably can release conidia into the environment during breathing. Given that some of these animals receive itraconazole prophylaxis during the rehabilitation process, this can have some implications beyond the penguin’s rehabilitation. Large use of prophylaxis in this situation can contributes to the selection of resistant strains in this context. Thus, considering the One Health approach, the existence of resistance in this specific setting may have broader implications. Therefore, although no resistant strains were found in our study, the surveillance ofazole resistance in avian species group is indicated given the worldwide emergence of azole resistance in *A. fumigatus sensu stricto*.

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