Cutaneous fungi on southern right whales (*Eubalaena australis*) from South Africa as a possible indicator of health risks.

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Abstract

A number of fungal species have evolved as opportunistic pathogens of humans and animals. These infections, that can be systemic and/or cutaneous, mostly affect immuno-compromised individuals. In animals, most cutaneous infections are caused by fungi that have adapted to utilize keratin and can cause dermatophytosis. These fungi parasitize the keratinized layer of the epidermis, hair, feathers and horn, without affecting the deeper tissue. However, records on dermaphytosis in marine mammals, especially in cetaceans, are relatively rare. We were therefore interested to obtain an indication of the fungal taxa associated with the skin of the southern right whale, *Eubalaena australis.* Consequently, skin samples were collected from freshly beached whales, along the coast of South Africa, to test for the presence of pathogenic fungi associated with these (presumably) debilitated animals. The control group for this study consisted of biopsies collected under sterile conditions from free-swimming individuals in St Helena Bay, South Africa. To determine the presence of fungal dermatophytes, skin samples were cultivated on a series of isolation media using classical mycological isolation methods. The fungal isolates were identified using classical, as well as molecular identification techniques. In addition, the ability of the isolates to degrade keratin was determined using simple plate assays. It was found that a range of fungi occur on the skin of beached whales, including opportunistic pathogens belonging to the yeast genera *Candida* and *Cryptococcus*. Filamentous fungi belonging to the families Chaetomiaceae, Hypocreaceae and Trichomaceae were also found. In contrast to the host of fungi on the three beached whales so-far investigated, no fungi were recovered from five of the six animals in the control group. However, two filamentous fungal species were isolated from the sixth, an apparent healthy individual. One fungus belongs to the family Sclerotiniaceae, and the other is an undescribed black yeast. The filamentous fungi isolated during this study were all able to degrade keratin and belong to fungal groups known to harbor opportunistic fungal pathogens. As a result of the variety of cutaneous fungi found on the beached whales, and the apparent lack thereof on healthy free-swimming individuals, we hypothesize that the presence of these fungi on the skin of southern right whales may act as an indicator of health risk in these animals. This hypothesis should be tested in future studies.