

Characterization of Bacteria Living on the Teeth and Gums of Sharks, First Steps to Identify Potential Treatments in Case of Shark Bites

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Sharks are one of the ocean's most charismatic apex predators. According to statistics provided by Shark Attack Data (www.sharkattackdata.com), there were a total of 116 reported shark attacks in South Carolina since 1900. While most bites weren't fatal, a major risk associated with these shark bites is the possibility of subsequent bacterial infections. The primary goal of this work is to understand the bacterial composition of the oral cavity of some common coastal sharks of Beaufort County, South Carolina, and determine their sensitivity to different commonly used antibiotics as a potential tool for infection treatment. Swabs were taken of the upper and lower jaws of nine sharks, two Atlantic Sharpnose sharks, two Bonnethead sharks, two Bull sharks, two Sandbar sharks, and one Spinner shark, caught using hook and line off Beaufort County, South Carolina. Bacteria from the swabs were transferred into marine agar plates and incubated at 23°C for twenty-four to forty-eight hours. Fifty-three isolates were tested against seven types of antibiotics (Tetracycline, Neomycin, Novobiocin, Erythromycin, Kanomycin, Chloramphenicol, Streptomycin), comparing the average zone of inhibition and a total number of isolates affected by each antibiotic. The results showed that roughly 30% of isolated bacteria were coccus, 30% bacillus, and 40% coccobacillus, while 25% of isolates were gram-positive and 75% were gram-negative. Chloramphenicol showed inhibition capabilities in 100% of tested strains as well as the largest average zone of inhibition ($r=8.846$ mm) during this study, becoming a potential treatment option. Efforts continue with the identification of isolated bacteria using molecular techniques.

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