Aerobic Bacteria Cultured from the Mouth of the American Opossum (Didelphis virginiana) with Reference to Bacteria Associated with Bite Infections

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The American opossum inflicts bite injuries both when hunted for food and when accidentally provoked when handled in captivity. This study involved aerobically culturing organisms from the mouths of seven wild opossums (Didelphis virginiana). Isolates included streptococci, coagulase-positive and -negative staphylococci, Aeromonas spp., Citrobacter freundii, Eikenella corrodens, and Escherichia coli.

Didelphis virginiana, the American opossum, is a ubiquitous marsupial which is trapped and handled frequently, for a wide variety of purposes (1, 5-8). The anterior teeth of D. virginiana are long, slender, and similar to those of a cat. In bite injuries, this similarity might facilitate the delivery of microbes deep into injured tissue, thereby enhancing the likelihood of soft tissue infection. Bacteria cultured from dog bite cellulitides and uninfected wounds approximate the microbes isolated from canine mouths (3, 10, 13, 17). Knowing the microbial organisms which might infect bite injuries aid clinicians in choosing appropriate antimicrobial agents. However, we are unaware of any studies to date which identify bacteria carried in the oral cavity of D. virginiana.

Seven adult opossums (D. virginiana) weighing between 3 and 6 kg were used as subjects. All animals were caught in the wild (in Florida) and transported to the Clinical Investigation Directorate, Lackland Air Force Base, Tex. Subjects did not receive antibiotics prior to study, and none evidenced clinical periodontal cellulitides or abscesses. Although opossums generally scavenge for food, subjects were fed a liquid feline diet (Critical Care Feline Liquid Diet; PetAg, Inc., Hampshire, Ill.) during the 1 to 2 months prior to study. Saliva from gingiva overlying the anterior maxillary and mandibular teeth in all animals was cultured by using a single rayon-tipped swab (Precision Culture C.A.T.S.; Precision Dynamic Corp., San Francisco, Calif.). Saliva specimens were transported directly to 5% sheep blood, chocolate, and MacConkey agar plates. Dental plaque cultures were obtained for four animals. Plaque specimens were acquired by scraping anterior maxillary and mandibular teeth in each animal with a no. 11 scalpel and depositing specimens directly onto the same three types of agar media. Bacteria were identified in the usual manner. Gram-negative bacilli were identified by differential growth on MacConkey agar, with the API 20E system (Analytab Products, Plainview, N.Y.), and with a flagellar stain. Anaerobes, fungi, and dysgonically fermenting organisms were not selectively cultured.

Gram-positive cocci recovered were alpha streptococci (not group D), gamma streptococci, and coagulase-positive and -negative staphylococci, including Staphylococcus sci...
and from only 0.3% of saliva specimens. Conversely, Pasteurella multocida has been isolated from 47 of 67 cat saliva cultures (18) but was not detected in this study. Komiyama et al. (14) found P. aeruginosa just as likely to be present in human plaque as in saliva; however, we cultured Pseudomonas spp. only from saliva specimens.

Antimicrobial susceptibility testing was not performed. Therefore, firm recommendations concerning antimicrobial therapy for opossum bites may not be derived from this study. It is noteworthy, however, that Pseudomonas spp. and Eikenella corrodens were recovered in addition to streptococci, staphylococci, and assorted gram-negative bacteria.

LITERATURE CITED