CHARACTERIZATION OF THE ORAL AEROBIC AND ANAEROBIC BACTERIAL FLORA OF ROYAL PYTHONS (Python regius)

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Abstract:
Royal pythons (Python regius) are one of the most popular pet snakes managed in captivity. Each year over 100,000 royal pythons (Python regius) are imported into the United States of America from West Africa, including Ghana, Togo, and Benin. Recent success in the captive breeding of this species has further increased the number of animals available in the pet trade.

In general, royal pythons have mild dispositions, but bites to humans do occur. Because infections can occur as a result of these bites, an understanding of the most common microbes associated with the oral cavity of these snakes may be useful to physicians attempting to treat a wound while a culture and sensitivity is pending. This information can also be useful to veterinarians when attempting to identify pathogens associated with stomatitis in a royal python. The purpose of this study was to characterize the aerobic and anaerobic microbial flora of the royal python.

Twelve, apparently healthy, two-year-old female royal pythons were randomly selected from a group of sixty snakes for this study. The snakes weighed between 550-750 grams. The snakes were each housed in a 28-quart plastic container and the containers were placed into a melamine rack system. Butcher paper was used for the substrate. The substrate was spot cleaned daily and completely removed every month. The enclosures were disinfected with 10% sodium hypochlorite once a month. The snakes were fed frozen thawed rats every seven to ten days and offered chlorinated tap water in a bowl. The environmental temperature was between 27-31°C (82-88°F) during the summer months (April to October) and 23-28°C (75-84°F) during the winter months (November to March). Lighting was supplied using eight, four-foot white (not full-spectrum) fluorescent light bulbs and indirect sunlight through external windows.

Specimens for microbiological analyses were obtained using sterile Culturettes (Becton Dickinson and Company, Sparks, MD, USA). Culture specimens were collected from two sites within the oral cavity, the buccal gingival surface and the dorsal palate. Within thirty minutes of collection, the samples were transported to the Louisiana Veterinary Medical Diagnostic Laboratory (LAVMDL) for processing. Each oropharyngeal swab was struck onto a 5% sheep blood, MacConkey, and anaerobic blood agar plates. The swab was then placed into...
seven ml of selenite. The blood and MacConkey agar plates and selenite were incubated under aerobic conditions at 37°C (98°F) for 24 hours, while the anaerobic plate was incubated under anaerobic conditions at 37°C (98°F) for 24 hours. After 24 hours of incubation, unique colonies were Gram-stained and subcultured on five percent sheep blood agar plates. Isolates from the anaerobic plates were tested for aerotolerance. An aliquot from the selenite broth was subcultured onto xylose-lysine-tergitol four agar for *Salmonella* sp testing. Confirmation of the isolates was attempted using standard biochemical testing and API Test Strips® (BioMerieux Vitek, Inc., Hazelwood, MO, USA).

Eleven different genera of aerobic bacteria and three different genera of anaerobic bacteria were isolated from the snakes. Aerobic isolates included: *Alcaligenes* sp, *Brevundimonas* sp, *Corynebacterium* sp, *E. coli*, *Klebsiella* sp, *Kocuria* sp, *Micrococcus* sp, *Pseudomonas* sp, *Shewanella* sp, *Staphylococcus* sp, and *Stenotrophomas* sp. The anaerobic genera included: *Anaerobiospirillum* sp, *Clostridium* sp, and *Eubacterium* sp.

The findings of this study suggest that captive royal pythons may harbor a diverse number of bacterial organisms within their oral cavity. Many of these organisms are considered opportunistic pathogens and have been isolated from bite wounds in humans. Although the dietary and environmental contribution to the establishment of the oral microbial flora in royal pythons was not tested in this study, the authors suspect that the microbial flora of royal pythons may vary with different husbandry and dietary practices. Microbial culture is an important diagnostic tool and should be used when attempting to isolate a specific pathogen from the oral cavity of a royal python.

**Key Words:** bacteria, royal python, culture, microbial, *Python regius*