Incidence of *Simonsiella* in the Oral Cavity of Dogs

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The gliding bacterium *Simonsiella* (Cytophagales, Simonsiellaceae) was found in palate samples from 66 out of 67 dogs. It is considered a common resident in the oral cavities of dogs.

Saphir and Carter (11) recently reported a 20% incidence of *Caryophanon* in the gingival flora from 50 dogs. They based their identification on the morphological appearance in Gram stains of multicellular filamentous organisms. In our judgment, these organisms belong to the genus *Simonsiella*, a gram-negative gliding bacterium (order Cytophagales, family Simonsiellaceae) (15) that has been known to occur in the oral cavities of dogs (1; compare reference 2 with 5; R. L. Richardson, C. Hansen, and J. Schmidt, J. Dent. Res. 45:78, 1966); cats (1; Richardson et al., 1966); sheep (12, 14; Richardson et al., 1966); rabbits (14); guinea pigs (1); horses, pigs, cows, and goats (12); chickens (9, 12); and humans (3, 4, 5, 8, 9, 12; Richardson et al., 1966; D. A. Kuhn, D. A. Gregory, J. Pangborn, and M. Mandel, J. Dent. Res. 53:108, 1974).

We have surveyed the mouths of 67 dogs and found *Simonsiella* in 66 (99%). We have also isolated nine axenic strains from these animals and have included them in our taxonomic study of 50 *Simonsiella* strains from dogs, cats, sheep, and humans (6, 7; D. A. Kuhn, D. A. Gregory, G. E. Buchanan, Jr., M. D. Nyby, and K. R. Daly, manuscript in preparation). Our survey samples were obtained from the palates of dogs with cotton swabs, which were immediately rolled over serum-enriched agar plates. After 6 to 10 h at 37°C, the plates were scanned microscopically, and the *Simonsiella* microcolonies were located by the distinct morphology of the filaments (14). The *Simonsiella* filaments were commonly associated with desquamated mucosal epithelial cells (Fig. 1). Neither during the surveys nor during the isolations of the 50 strains did we encounter *Caryophanon*. Trentini and Machen (17) presented experimental evidence supporting the hypothesis of *Cary-*

ophanon being a "specific resident" of cattle dung. Also, it appears doubtful whether *Caryophanon* would have grown under the experimental conditions of Saphir and Carter (W. C. Trentini, personal communication).

The misidentification of the multicellular filaments was probably due to the tendency of *Simonsiella* to attach to glass slides with its broad side, making it difficult to recognize whether the filaments are cylindrical (*Caryophanon*) or flat (*Simonsiella*). Figure 1 illustrates the three-dimensional structure of *Simonsiella* in an oral smear on a microscope slide. In wet mounts, observed in phase-contrast illumination, the dorsal-ventral convex-concave differentiation of the flattened filaments is readily apparent (Kuhn et al., manuscript in preparation). The staining reaction and cell wall ultrastructure of *Simonsiella* are gram negative (1, 10, 14; Kuhn et al., manuscript in preparation), whereas those of *Caryophanon* are gram positive (13, 16).

The high incidence of *Simonsiella* in our group of dogs can be explained by the survey procedure we employed. *Simonsiella* occurred more commonly and in greater abundance on the palate and buccal surfaces than on the gingiva. The oral specimens had been transferred directly to the agar medium without prior suspension and agitation in nutrient broth. Most *Simonsiella* strains do not suspend well in broth, water, or saline solution, and they may fail to grow after such treatment. The filaments tend to adhere to each other and to epithelial cells in situ (Fig. 1), and they require solid substrates for gliding motility. Also, the plates were incubated for 6 to 10 h, and never more than 14 h. Longer incubation allowed other oral organisms, especially streptococci, to overgrow the developing microcolonies of *Simonsiella*, making it impossible to detect and isolate filaments of *Simonsiella*. The axenic strains for our taxonomic study (6, 7; Kuhn et al., manuscript in preparation) had been isolated by fishing *Simonsiella* filaments with an inoculating

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FIG. 1. Stereoscanning electron micrographs illustrating the flat, dorsoventrally differentiated morphology of several multicellular filaments of *Simonsiella* and the orientation of these filaments in their position of attachment to a mucosal squamous epithelial cell from the oral cavity of a dog. The palate swabbing was smeared onto a glass microscope slide as for staining, air-dried, coated with silver and gold, and examined with a Cambridge Mark II A Stereoscan electron microscope. $\times 2,000$.

needle while viewing the plates under the microscope.

We consider *Simonsiella* to be a resident in the oral cavities of dogs and not a transient as alleged by Saphir and Carter (11) for the mistakenly identified "*Caryophanon*."

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