



Title	ADHESION OF BOVINE URINARY CORYNEBACTERIA TO THE EPITHELIAL CELLS OF VARIOUS PARTS OF THE BOVINE URINARY TRACT, AND SURVIVAL OF THE BACTERIA IN SOIL
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ADHESION OF BOVINE URINARY CORYNEBACTERIA TO THE EPITHELIAL  
CELLS OF VARIOUS PARTS OF THE BOVINE URINARY TRACT, AND  
SURVIVAL OF THE BACTERIA IN SOIL

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Adhesion of *Corynebacterium renale* and *C. pilosum* to the epithelial cells of various parts of the bovine urinary tract—the vulva, the vaginal vestibule, the urethra, the urinary bladder, the ureter and the renal pelvis (the renal calyx)—was examined. Non-piliated ( $P^-$ ) and piliated ( $P^+$ ) clones of *C. pilosum* were selected, and the adhesive function of the pili of *C. pilosum* was also examined.

Adhesion of *C. renale* and *C. pilosum* was most efficient to the epithelial cells of the vulva. Of the epithelial cells the vulva, the cornified cells lacking the nucleus bound more bacteria than those with the indistinct nucleus and the non-cornified cells, indicating that the adhesion was most effective to the most aged cells. Marked adhesion of *C. renale* and *C. pilosum* to the epithelial cells of the vulva suggests that the vulva is the best target tissue for these bacteria, and that the vulva, which is situated the open end of the urinary tract, may play an important role as the portal of entry of bovine urinary corynebacteria.

The number of  $P^+$  bacteria of *C. pilosum* which adhered to the epithelial cells of various parts of the bovine urinary tract was larger than that of  $P^-$  bacteria of *C. pilosum*, which adhered to these cells. By the anti-whole cell antiserum, the adhesion of  $P^+$  bacteria of *C. pilosum* to the epithelial cells of the vulva and the uroepithelial cells was inhibited more effectively than by the anti-pilus antiserum. The adhesion of  $P^-$  bacteria of *C. pilosum* to these cells was also effectively inhibited by the anti-whole cell antiserum. These findings indicate that the adhesion of *C. pilosum* is mainly dependent on the pili, and then on the other surface components such as the cell wall.

Survival of 3 strains of *C. renale*, *C. pilosum* and *C. cystitidis* in the soil was examined. *C. pilosum* survived longer, for at least 22 weeks, than *C. renale* and *C. cystitidis*, which survived for several weeks. This finding and the fact that *C. pilosum* adhered best to the epithelial cells of the vulva suggest the life cycle of this bacteria in a field. *C. pilosum*, which is parasitic on the vaginal vestibule of apparently healthy cows, is excreted in the soil with urine, survives and has the opportunity to adhere again to the epithelial cells of the bovine vulva.