

IMAGEN MICROBIOLÓGICA

## *Campylobacter fetus* subsp. *venerealis* adhesion to MDBK cells

### Adhesión de *Campylobacter fetus* subsp. *venerealis* a células MDBK

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Members of the genus *Campylobacter* are recognized as causative agents of infectious diseases in humans and animals throughout the world. These bacteria are curved to spiral rods and have a single polar flagellum. *Campylobacter fetus* subsp. *venerealis* and *Campylobacter fetus* subsp. *fetus* are the causative agents of bovine genital campylobacteriosis, one of the most important venereal diseases in Argentina, which characteristically produces embryonic death and occasional abortion<sup>1</sup>.

Regarding *Campylobacter* pathogenesis, there is limited knowledge about the mechanisms involved in host-bacteria interaction in the venereal environment, adhesion, chemotaxis or tissue tropism<sup>4</sup>.

*Campylobacter fetus* is highly adapted to mucosal surfaces. Bacterial adhesion is an important initial step in

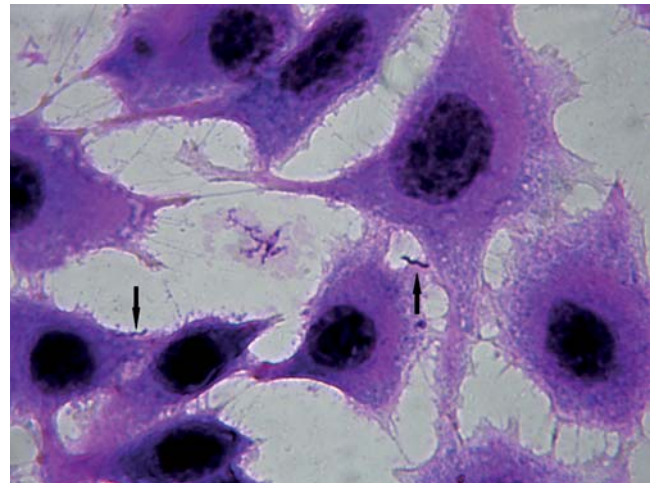
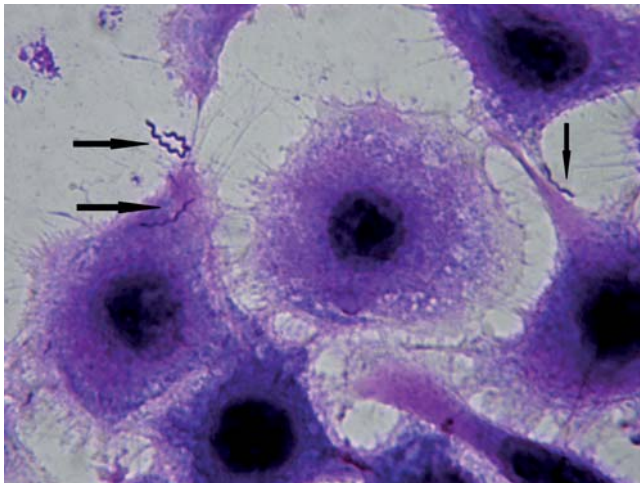
infection. Pathogens use surface-located adhesins to interact with specific host cell receptors. Although some bacterial structures involved in the adhesion process are still unknown, there is evidence that the lipopolysaccharide and the flagellum participate in bacterial adherence. The flagellum also enables bacterial movement through the mucus<sup>4</sup>.

The challenge of cell lines such as HeLa, Hep-2, CHO, VERO, MDBK has allowed the evaluation of different species of *Campylobacter* strains isolated from humans and animals<sup>3,5</sup>. Cell adhesion and invasion for different *Campylobacter* species have been confirmed; however invasion has not been demonstrated for *C. fetus*<sup>2</sup>.

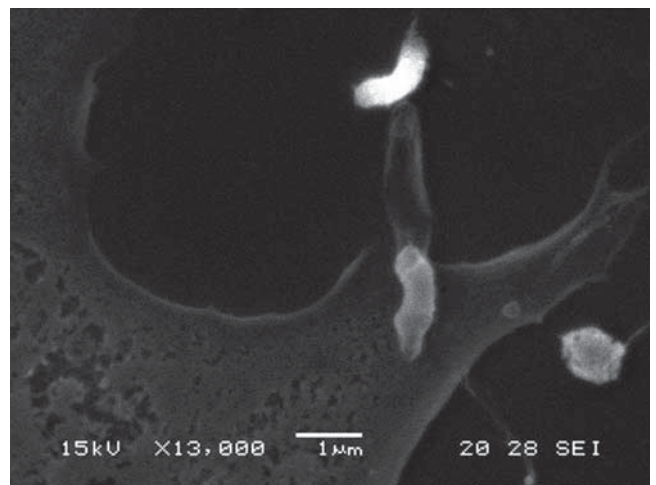
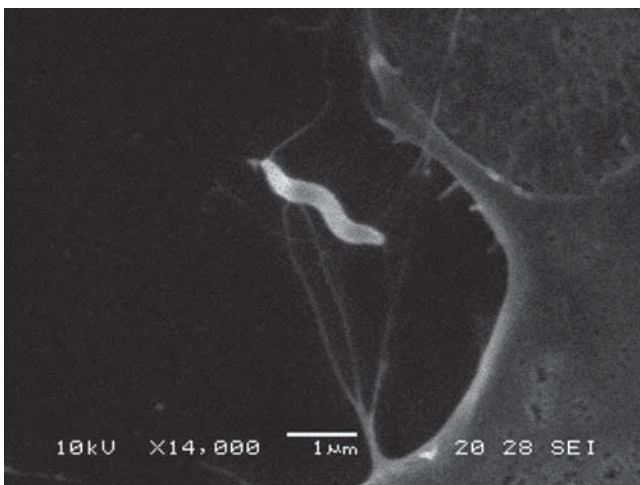
*C. fetus* subsp. *venerealis* adhesion to MDBK cells was analyzed and confirmed by optical microscopy (Figs. 1 and 2) and scanning electron microscopy (Figs. 3 and 4). It was observed that the bacterium attaches by the apical portion involving the flagellum in the adhesion, which could indicate the presence of adhesins on it.

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Figures 1 and 2 Observation of *Campylobacter fetus* subsp. *venerealis* adhered to MDBK cells. Giemsa stain, 100X.



Figures 3 and 4 Observation by scanning electron microscopy of *Campylobacter fetus* subsp. *venerealis* adhered to MDBK cells.

## References

1. Brenner DJ, Krieg NR, Staley JT. *Campylobacter*. In: Staley JT, *Chairman*, Boone DR, *Vice Chairman*, Brenner DJ, De Vos P, Garrity GM, Goodfellow M, Krieg NR, Rainey FA, Schleifer KH, editors. *Bergey's Manual of Systematic Bacteriology*, 2nd ed. USA: Editorial Board, 2005, p. 1145-60.
2. Catena M. *Campilobacteriosis genital bovina: inmunopatogenia de la mortalidad embrionaria*. Tesis doctoral para obtener el grado académico de Doctor en Ciencia Animal. 2002. Facultad de Ciencias Veterinarias. UNCPBA.
3. Chiapparrone ML, Catena M, Rodríguez E, Echevarría H, Monteavaro C, Morán P, Arroyo G, Soto P. Evaluación de la adhesión de *Campylobacter fetus venerealis* en diferentes líneas celulares. XIII Jornadas Argentinas de Microbiología, 2008, p. 181, Rosario. Santa Fe, Argentina.
4. Joens LA, Haesebrouck F, Pasmans F. *Campylobacter* and *Helicobacter*. In: Gyles CL, Prescott JF, Songer G, Thoen CO, editors. *Pathogenesis of bacterial infections in animals*. 4th ed. USA: Wiley-Blackwell, 2010, p. 483-501.
5. Prasad KN, Dhole TN, Ayyagari A. Adherence, invasion and cytotoxin assay of *Campylobacter jejuni* in HeLa and HEp-2 Cells. *J Diarrhoeal Dis Res*. 1996;4:255-259.