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MICROBIOLOGICAL IMAGE

## Capsule expression in isolates of *Streptococcus equi* subsp. *equi*



### Expresión de la cápsula en aislamientos de *Streptococcus equi* subsp. *equi*

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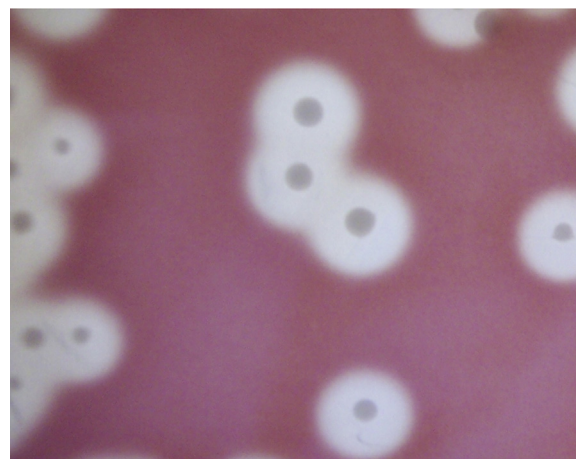
*Streptococcus equi* subsp. *equi* (*S. equi*) of Lancefield group C and beta-hemolytic streptococci (Fig. 1) causes strangles, an acute and contagious lymphadenopathy of young horses.<sup>1–3</sup> *S. equi* is host-adapted to equine but, unlike *Streptococcus equi* subsp. *zooepidemicus*, does not colonize the nasopharynx in healthy horses.<sup>2,3</sup>

The hyaluronic acid capsule is an important virulence factor for many streptococci<sup>1–4</sup> and it is a high molecular weight polymer consisting of alternating residues of N-acetylglucosamine and glucuronic acid. The capsule reduces the phagocytic function of neutrophils and is required for the activity of proteases, toxins and the SeM protein.<sup>3</sup> Furthermore, this capsule mimics the molecule in animal tissue and protects the bacterium from immune recognition.<sup>3</sup>

Virulent isolates of *S. equi* are usually highly encapsulated<sup>1,3</sup> and nonencapsulated mutants are not able to progress from tonsillar tissue to the lymph nodes.<sup>2</sup> However, the high levels of capsule may reduce adhesion to the mucosal surface.<sup>2</sup>

*S. equi* isolates (Fig. 1) were obtained from horses suffering from clinical strangles and guttural pouch empyema in Buenos Aires. The isolates were cultured for 24 h at

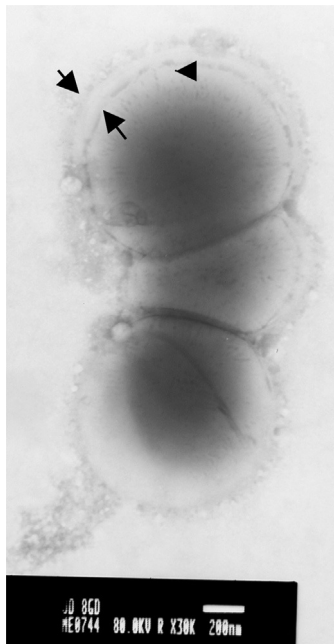
37°C in 5 ml of Todd Hewitt broth supplemented with 0.2% yeast extract and 10% adult horse serum. Then, capsules were observed with phosphotungstic acid (PTA) using a JEOL 1200EX II transmission electronic microscope at 50,000 magnification. The photographs were taken at 80 KV (Figs. 2 and 3).



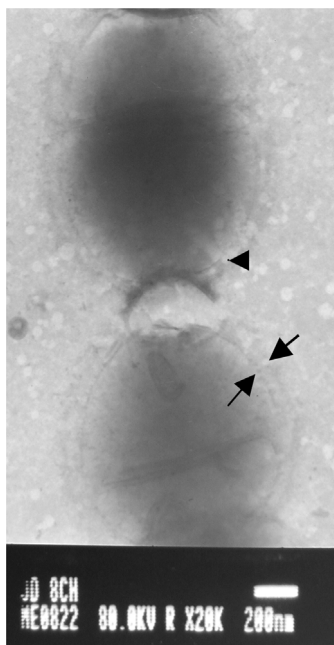
**Figure 1** Beta-hemolytic colonies of *Streptococcus equi* subsp. *equi* in blood equine agar.

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**Figure 2** Capsule observation by transmission electronic microscope of *Streptococcus equi* subsp. *equi* showing high levels of capsule expression.



**Figure 3** Capsule observation by transmission electronic microscope of *Streptococcus equi* subsp. *equi* showing low levels of capsule expression.

High (Fig. 2) and low (Fig. 3) levels of capsule expression were observed, even in isolates from the same sample.

## Ethical responsibilities

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that no patient data appear in this article.

**Right to privacy and informed consent.** The authors declare that no patient data appear in this article.

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