May Staphylococcus pseudintermedius be non-haemolytic?

Staphylococcus pseudintermedius is a common veterinary pathogen but a rare agent of human diseases (Savini et al., 2013a). It belongs to the Staphylococcus intermedius group (SIG) together with Staphylococcus intermedius and Staphylococcus delphini (Savini et al., 2013a).

In the past years, diverse phenotypical aspects have been used to discriminate among the three SIG members; nonetheless, it is nowadays clear that neither biochemical nor metabolic features can be considered as pathognomonic (Savini et al., 2013a).

However, it is known that S. (pseud)intermedius exhibits typical double-zone haemolysis (Fig. 1) that is β-haemolytic in the inner band but α-haemolytic (due to β-haemolysin, a sphingomyelinase) on the external one (Devriese et al., 2005; Savini et al., 2013a). Preliminary recognition of this species should then rely on the observation of coagulase-positive staphylococci (CoPS), that do not ferment mannitol (or show a weak and delayed fermentation of this sugar) and produce double-band haemolysis on sheep blood agar (Devriese et al., 2005; Savini et al., 2013a).

In fact, mannitol non-fermenting CoPS other than S. pseudintermedius (Staphylococcus lutrae, Staphylococcus schleiferi subsp. coagulans and Staphylococcus aureus subsp. anaeobius) are haemolytic, but they do not form such a particular kind of haemolysis (Savini et al., 2013b).

Unexpectedly, and although initially describing S. pseudintermedius as haemolytic (in general), Awji instead stated that the organism can be presumptively differentiated from S. aureus as the former lacks β-haemolysis (on sheep blood agar) (Awji et al., 2012). Indeed, this is an interesting finding. Even in the era of the the genome, in fact, accurate phenotype observation remains crucial to reaching a conclusive bacterial diagnosis. Accordingly, it is known that S. (pseud)intermedius has to be distinguished from the rare, double-zone haemolytic S. aureus strains that do not ferment mannitol, thus mimicking SIG members (Cebrián et al., 2007; Savini et al., 2013b).

In the light of Awji’s datum, however, and provided that the presence of non-β-haemolytic S. pseudintermedius strains (grown on sheep blood agar) receive further confirmation, the diagnostic algorithm of CoPS should be reconsidered.

Conflict of interests
The authors have no conflict of interests to declare.

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Abbreviation: CoPS, coagulase-positive staphylococci; SIG, Staphylococcus intermedius group.


Fig. 1. Double-zone haemolysis by the human S. pseudintermedius strain DSM 25714 collected in the Bacteriology laboratory, Clinical Microbiology and Virology, Spirito Santo Hospital, Pescara, Italy, and cited in Savini et al., 2013a.
