

Identification of bovine mastitis pathogens using MALDI-TOF mass spectrometry in Brazil

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SUPPLEMENTARTY FILE

Supplementary Materials and Methods

Biochemical tests

All isolates were identified by morphological and biochemical tests as described in Barrow and Feltham (1993) and NMC (2004). Staphylococci were presumptively identified by coagulase tube test and acetoin production. The following characteristics were used to identify catalase-negative, Gram-positive cocci: type of haemolysis; growth on bile-esculin agar; tolerance to 6.5% NaCl; hydrolysis of esculin and sodium hypurate; use of inulin and trehalose; and the Christie, Atkins and Munch-Peterson (CAMP) test. For the identification of Gram-negative bacteria, the following characteristics were used: growth on MacConkey agar; acid production on Triple Sugar-Iron Agar, positivity in methyl red test, acetoin production; use of citrate as a carbon source; glucose oxidation/fermentation; motility; and indole and hydrogen sulphide production.

16S rRNA sequencing

A previous study has identified *Staphylococcus* spp. by partial sequencing of the 16S rRNA gene (Lange *et al.*, 2015). Classification of an isolate to a particular species was based on $\geq 99\%$ identity with 16S rRNA sequences deposited in GenBank.

MALDI-TOF mass spectrometry

Direct transfer protocol

The samples were inoculated in Brain Heart Infusion agar (BHI) or blood agar at 37°C for 24 h. Some catalase-negative, Gram-positive cocci were grown on blood agar, as they showed little or no growth on BHI agar after 24 hours of cultivation. Each culture was transferred to a microplate (96 MSP, Bruker®-Billerica, USA) using a single-use wooden

stick, in duplicate. The bacterial sediment was covered by a lysis solution (70% formic acid, Sigma-Aldrich®) and allowed to dry. Additionally, a 1 µL aliquot of matrix solution (alpha-ciano-4-hidroxi-cinamic acid diluted in 50% acetonitrile and 2.5% trifluoroacetic acid, Sigma-Aldrich®) was added to each sediment, and allowed to dry.

Extended protocol

One to three colonies from each sample were homogenized in 300 µL of ultrapure water; 50 µL of the 70% formic acid solution was added and the suspension was homogenized; 50 µL of 100% acetonitrile (Sigma-Aldrich®) was added and the suspension was homogenized and centrifuged at 12,000 x g for 2 minutes. One µL of the resulting supernatant was deposited on the target plate of the equipment, followed by drying at room temperature; 1 µL of the matrix solution was added to each sediment, and allowed to dry.

Reference

Barrow GI & Feltham RKA 1993 Cowan and Steel's Manual for the Identification of Medical Bacteria. 3. ed. Cambridge, Cambridge University Press

Supplementary Table S1. Results of the identification of standard strains, staphylococci, catalase-negative, Gram-positive cocci and Gram-negative bacteria by MALDI-TOF MS, 16S rRNA sequencing and biochemical tests.

Standard strains

| Strain | Identification by MALDI-TOF MS | MALDI-TOF MS Score |
|--|------------------------------------|--------------------|
| <i>Arcanobacterium pyogenes</i> ATCC 49698 | <i>Trueperella pyogenes</i> | 2.0 |
| <i>Corynebacterium fimi</i> NCTC 7547 ^T | <i>Cellulomonas fimi</i> | 2.2 |
| <i>Enterococcus faecalis</i> ATCC 29212 | <i>Enterococcus faecalis</i> | 2.3 |
| <i>Lactococcus lactis</i> Apg 1201 | <i>Lactococcus lactis</i> | 2.2 |
| <i>Listeria monocytogenes</i> ATCC 11117 | <i>Listeria monocytogenes</i> | 2.2 |
| <i>Staphylococcus aureus</i> ATCC 51651 | <i>Staphylococcus aureus</i> | 2.4 |
| <i>Staphylococcus capitis</i> ATCC 35661 | <i>Staphylococcus capitis</i> | 2.2 |
| <i>Staphylococcus carnosus</i> TM300 | <i>Staphylococcus carnosus</i> | 2.2 |
| <i>Staphylococcus epidermidis</i> ATCC 12228 | <i>Staphylococcus epidermidis</i> | 2.1 |
| <i>Staphylococcus gallinarum</i> ATCC 700401 | <i>Staphylococcus gallinarum</i> | 2.0 |
| <i>Staphylococcus haemolyticus</i> ATCC 29970 ^T | <i>Staphylococcus haemolyticus</i> | 2.3 |
| <i>Staphylococcus hyicus</i> ATCC 11249 ^T | <i>Staphylococcus hyicus</i> | 2.0 |

| | | |
|---|---|-----|
| <i>Staphylococcus intermedius</i> ATCC 29663 ^T | <i>Staphylococcus intermedius</i> | 2.3 |
| <i>Staphylococcus lentus</i> ATCC 700403 | <i>Staphylococcus lentus</i> | 2.0 |
| <i>Staphylococcus lugdunensis</i> ATCC 49576 | <i>Staphylococcus lugdunensis</i> | 2.2 |
| <i>Staphylococcus saprophyticus</i> ATCC 15305 ^T | <i>Staphylococcus saprophyticus</i> | 2.0 |
| <i>Staphylococcus sciuri</i> ATCC 29061 | <i>Staphylococcus sciuri</i> | 2.1 |
| <i>Staphylococcus simulans</i> ATCC 27851 | <i>Staphylococcus simulans</i> | 2.2 |
| <i>Staphylococcus warneri</i> ATCC 49454 | <i>Staphylococcus warneri</i> | 2.0 |
| <i>Staphylococcus xylosus</i> ATCC 29971 ^T | <i>Staphylococcus xylosus</i> | 2.3 |
| <i>Streptococcus agalactiae</i> ATCC 12386 | <i>Streptococcus agalactiae</i> | 2.2 |
| <i>Streptococcus bovis</i> ATCC 33317 ^T | <i>Streptococcus lutetiensis</i> | 2.1 |
| <i>Streptococcus dysgalactiae</i> subsp. <i>equisimilis</i> ATCC 12388 ^T | <i>Streptococcus dysgalactiae</i> | 2.2 |
| <i>Streptococcus equi</i> subsp. <i>equi</i> ATCC 33398 ^T | <i>Streptococcus equi</i> subsp. <i>equi</i> | 2.4 |
| <i>Streptococcus equi</i> subsp. <i>zooepidemicus</i> ATCC 43079 ^T | <i>Streptococcus equi</i> subsp. <i>zooepidemicus</i> | 2.5 |
| <i>Streptococcus gallolyticus</i> ATCC 49147 | <i>Streptococcus gallolyticus</i> | 2.1 |
| <i>Streptococcus pyogenes</i> ATCC 12384 | <i>Streptococcus pyogenes</i> | 2.4 |
| <i>Streptococcus uberis</i> ATCC 700407 | <i>Streptococcus uberis</i> | 2.2 |
| <i>Enterobacter cloacae</i> CDC 3430 | <i>Enterobacter asburiae</i> | 2.0 |
| <i>Enterobacter sakazakii</i> CDC 7006 | <i>Cronobacter sakazakii</i> | 2.1 |
| <i>Escherichia coli</i> ATCC 11229 | <i>Escherichia coli</i> | 2.4 |
| <i>Klebsiella pneumoniae</i> ATCC 13883 ^T | <i>Klebsiella pneumoniae</i> | 2.2 |
| <i>Salmonella</i> Braenderup ATCC BAA-664 | <i>Salmonella</i> sp. | 2.3 |
| <i>Salmonella</i> Typhi IAL 1251 | <i>Salmonella</i> sp. | 2.3 |
| <i>Salmonella</i> Typhimurium IAL 1412 | <i>Salmonella</i> sp. | 2.2 |

***Staphylococcus* sp.**

| Isolate number | Identification by 16S rRNA sequencing | Identification by MALDI-TOF MS | MALDI-TOF MS score |
|-----------------------|--|---------------------------------------|---------------------------|
| 2428 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.4 |
| 3108 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3109 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3115 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3176 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3197 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3266 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3270 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3275 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |

| | | | |
|------|-----------------------|------------------------|-----|
| 3278 | <i>S. chromogenes</i> | <i>S. epidermidis</i> | 2.0 |
| 3281 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3282 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3286 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3287 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3290 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3292 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3294 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3295 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3296 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3384 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3386 | <i>S. chromogenes</i> | <i>S. haemolyticus</i> | 2.1 |
| 3392 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3399 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3406 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3411 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.4 |
| 3412 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3413 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3421 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.4 |
| 3423 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3429 | <i>S. chromogenes</i> | <i>S. haemolyticus</i> | 2.0 |
| 3430 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 3750 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3807 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 3811 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3815 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3816 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 3819 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3932 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3940 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4080 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 4155 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 4240 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4241 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4243 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 4441 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 4442 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 4443 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 4461 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 4476 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 4477 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 4478 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4479 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4496 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 4497 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |

| | | | |
|-------|--|-----------------------|-----|
| 4571 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 5463 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.4 |
| 5471 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.4 |
| 5510 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 7737 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 7738 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 7739 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 7742 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 8521 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 8522 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 8523 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 8525 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 8527 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 8530 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 8533 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10165 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 10166 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 10167 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 10168 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10169 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 10170 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10171 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10172 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.0 |
| 10173 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10174 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.2 |
| 10175 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10176 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.1 |
| 10177 | <i>S. chromogenes</i> | <i>S. chromogenes</i> | 2.3 |
| 3198 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.3 |
| 3203 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 3264 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.0 |
| 3297 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 3298 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 3316 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 3528 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 3576 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.3 |
| 3813 | <i>S. aureus</i> | <i>S. aureus</i> | 2.3 |
| 4059 | <i>S. aureus</i> | <i>S. aureus</i> | 2.1 |
| 4188 | <i>S. aureus</i> | <i>S. aureus</i> | 2.2 |

| | | | |
|------|--|-----------------------|-----|
| 4189 | <i>S. aureus</i> | <i>S. aureus</i> | 2.2 |
| 4195 | <i>S. aureus</i> | <i>S. aureus</i> | 2.0 |
| 4197 | <i>S. aureus</i> | <i>S. aureus</i> | 2.2 |
| 4231 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.0 |
| 4437 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 5337 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 5475 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 5684 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.3 |
| 5685 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 5702 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 5736 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 7148 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 7430 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 7431 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.0 |
| 7432 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 7433 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 7434 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 7435 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.3 |
| 8524 | <i>S. aureus</i> | <i>S. aureus</i> | 2.0 |
| 8526 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.1 |
| 8528 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.3 |
| 8529 | <i>S. aureus</i> | <i>S. aureus</i> | 2.0 |
| 8531 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 8532 | <i>S. aureus</i> subsp. <i>aureus</i> | <i>S. aureus</i> | 2.2 |
| 3267 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3268 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3269 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3274 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3276 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3283 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 3284 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 3289 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |

| | | | |
|-------|------------------------|------------------------|------------|
| 3291 | <i>S. epidermidis</i> | <i>S. chromogenes</i> | 2.3 |
| 3293 | <i>S. epidermidis</i> | <i>S. haemolyticus</i> | 2.2 |
| 3414 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3614 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 3699 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 4369 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 4438 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.2 |
| 4439 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8534 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8540 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.2 |
| 8545 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8546 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8547 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.0 |
| 8566 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8601 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8605 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 8612 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.2 |
| 8621 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.2 |
| 10178 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 10179 | <i>S. epidermidis</i> | <i>S. epidermidis</i> | 2.1 |
| 3301 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 3400 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 3415 | <i>S. sciuri</i> | <i>S. sciuri</i> | 1.9 |
| 3949 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.1 |
| 4060 | <i>S. sciuri</i> | <i>S. sciuri</i> | 1.8 |
| 4142 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 4144 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 4145 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 4149 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 4152 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.0 |
| 4153 | <i>S. sciuri</i> | <i>S. sciuri</i> | 2.1 |
| 3279 | <i>S. hyicus</i> | <i>S. capitis</i> | 2.1 |
| 3629 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.0 |
| 3678 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.1 |
| 4113 | <i>S. hyicus</i> | <i>S. hyicus</i> | 1.9 |
| 4244 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.2 |
| 5365 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.0 |
| 5367 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.1 |
| 5368 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.1 |
| 5718 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.0 |
| 5720 | <i>S. hyicus</i> | <i>S. hyicus</i> | 2.1 |
| 3265 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.0 |
| 3271 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 1.8 |
| 3272 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.0 |
| 3285 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.2 |

| | | | |
|-------|---|----------------------------|------------|
| 3398 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.1 |
| 3420 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.0 |
| 4440 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.1 |
| 4622 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 1.8 |
| 7741 | <i>S. haemolyticus</i> | <i>S. haemolyticus</i> | 2.1 |
| 3107 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 3111 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 3114 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 3299 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 3385 | <i>S. simulans</i> | <i>S. simulans</i> | 2.1 |
| 3577 | <i>S. simulans</i> | <i>S. simulans</i> | 2.1 |
| 7740 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 7744 | <i>S. simulans</i> | <i>S. simulans</i> | 2.0 |
| 1995 | <i>S. agnetis</i> | <i>S. hyicus</i> | 2.1 |
| 2039 | <i>S. agnetis</i> | <i>S. hyicus</i> | 2.0 |
| 3682 | <i>S. agnetis</i> | <i>S. hyicus</i> | 2.2 |
| 4738 | <i>S. agnetis</i> | <i>S. hyicus</i> | 2.1 |
| 3273 | <i>S. auricularis</i> | <i>S. auricularis</i> | 1.8 |
| 3280 | <i>S. caprae</i> | <i>S. hyicus</i> | 2.1 |
| 5590 | <i>S. devriesei</i> | Not identified | |
| 5356 | <i>S. intermedius</i> | <i>S. pseudintermedius</i> | 2.3 |
| 5488 | <i>S. pasteurii</i> | <i>S. pasteurii</i> | 2.1 |
| 3527 | <i>S. succinus</i> | <i>S. succinus</i> | 2.1 |
| 3526 | <i>S. xylosum/S. saprophyticum</i> | <i>S. xylosum</i> | 2.1 |
| 3529 | <i>S. xylosum/S. saprophyticum</i> | <i>S. xylosum</i> | 2.0 |
| 3531 | <i>S. xylosum/S. saprophyticum</i> | <i>S. xylosum</i> | 2.1 |
| 5477 | <i>S. xylosum/S. saprophyticum</i> | <i>S. xylosum</i> | 2.3 |
| 4190 | <i>S. haemolyticus/S. devriesei</i> | <i>S. haemolyticus</i> | 2.1 |
| 10180 | <i>S. haemolyticus/S. warneri/S. auricularis</i> | <i>S. haemolyticus</i> | 1.8 |
| 10181 | <i>S. haemolyticus/S. devriesei/S. auricularis/S. warneri</i> | <i>S. haemolyticus</i> | 2.0 |
| 3383 | Not identified (<i>S. aureus</i> 98%) | <i>S. aureus</i> | 1.8 |
| 3419 | Not identified (<i>S. aureus</i> 98%) | Not identified | |
| 3749 | Not identified (<i>S. aureus</i> 98%) | <i>S. aureus</i> | 1.7 |

Catalase-negative, Gram-positive cocci

| Isolate number | Biochemical identification | Identification by MALDI-TOF MS | MALDI-TOF MS score |
|----------------|----------------------------|--------------------------------|--------------------|
|----------------|----------------------------|--------------------------------|--------------------|

| | | | |
|-------|--------------------------|----------------------|-----|
| 3370 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 4203 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |
| 4635 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 4664 | <i>Streptococcus</i> sp. | <i>S. agalactiae</i> | 2.2 |
| 4720 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |
| 6730 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 8136 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 8416 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10039 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10041 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10043 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10046 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10047 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10050 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10052 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10054 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10055 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10056 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10057 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10058 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10060 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10062 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10063 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10064 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10066 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.5 |
| 10067 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10069 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10070 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10072 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10074 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10077 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |
| 10078 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10089 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10091 | <i>Streptococcus</i> sp. | <i>S. agalactiae</i> | 2.2 |
| 10116 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10114 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10119 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10120 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10121 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |
| 10123 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10125 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10126 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10151 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10156 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10157 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |

| | | | |
|-------|-------------------------|----------------------|------------|
| 10158 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.3 |
| 10159 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.4 |
| 10160 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 10162 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.1 |
| 10163 | <i>S. agalactiae</i> | <i>S. agalactiae</i> | 2.2 |
| 2851 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 3352 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 3433 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |
| 3674 | <i>S. dysgalactiae</i> | <i>S. uberis</i> | 2.2 |
| 4709 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |
| 5147 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 5225 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 5381 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 5575 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |
| 8139 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 8490 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |
| 8739 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 8945 | <i>S. agalactiae</i> | <i>S. uberis</i> | 1.8 |
| 10040 | <i>S. uberis</i> | <i>S. uberis</i> | 2.3 |
| 10042 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 10045 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10053 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 10065 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10071 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10081 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 10082 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |
| 10083 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10084 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10085 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 10093 | <i>Enterococcus</i> sp. | <i>S. uberis</i> | 2.3 |
| 10095 | <i>Enterococcus</i> sp. | <i>S. uberis</i> | 2.1 |
| 10108 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10109 | <i>S. uberis</i> | <i>S. uberis</i> | 2.3 |
| 10110 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10128 | <i>S. equinus</i> | <i>S. uberis</i> | 2.4 |
| 10130 | <i>S. uberis</i> | <i>S. uberis</i> | 2.3 |
| 10132 | <i>S. uberis</i> | <i>S. uberis</i> | 2.3 |
| 10133 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10134 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10135 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10136 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10146 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10148 | <i>S. uberis</i> | <i>S. uberis</i> | 2.3 |
| 10149 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 10150 | <i>S. uberis</i> | <i>S. uberis</i> | 2.0 |

| | | | |
|-------|--------------------------|----------------------------------|------------|
| 10153 | <i>S. uberis</i> | <i>S. uberis</i> | 2.1 |
| 10154 | <i>S. uberis</i> | <i>S. uberis</i> | 2.4 |
| 10155 | <i>S. uberis</i> | <i>S. uberis</i> | 2.2 |
| 3672 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.3 |
| 4579 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.1 |
| 5211 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.0 |
| 5374 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.0 |
| 5408 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.0 |
| 8140 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10044 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.1 |
| 10079 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.1 |
| 10080 | <i>Streptococcus</i> sp. | <i>S. dysgalactiae</i> | 2.1 |
| 10094 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10140 | <i>Streptococcus</i> sp. | <i>S. dysgalactiae</i> | 2.3 |
| 10142 | <i>Streptococcus</i> sp. | <i>S. dysgalactiae</i> | 2.2 |
| 10143 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10144 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10145 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.3 |
| 10152 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10164 | <i>S. dysgalactiae</i> | <i>S. dysgalactiae</i> | 2.2 |
| 10087 | <i>S. dysgalactiae</i> | <i>S. pluranimalium</i> | 2.0 |
| 10088 | <i>S. uberis</i> | <i>S. pluranimalium</i> | 2.1 |
| 10138 | <i>Enterococcus</i> sp. | <i>S. pluranimalium</i> | 2.0 |
| 10141 | <i>S. uberis</i> | <i>S. pluranimalium</i> | 2.0 |
| 10161 | <i>S. agalactiae</i> | <i>S. pluranimalium</i> | 2.1 |
| 3754 | <i>S. equinus</i> | <i>S. equinus/S. lutetiensis</i> | 1.9 |
| 10086 | <i>S. equinus</i> | <i>S. lutetiensis</i> | 1.9 |
| 10122 | <i>S. equinus</i> | <i>S. equinus/S. lutetiensis</i> | 1.9 |
| 10061 | <i>S. equinus</i> | <i>S. gallolyticus</i> | 2.2 |
| 198 | <i>Streptococcus</i> sp. | <i>S. parauberis</i> | 2.0 |
| 10049 | <i>Streptococcus</i> sp. | <i>S. oralis</i> | 2.0 |
| 3472 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 3649 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 4239 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10051 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.4 |
| 10059 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10090 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.4 |
| 10111 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10112 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10115 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10118 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |
| 10124 | <i>Streptococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.2 |
| 10129 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.3 |

| | | | |
|-------|--------------------------|------------------------------|------------|
| 10137 | <i>Enterococcus</i> sp. | <i>Enterococcus faecalis</i> | 2.2 |
| 223 | <i>Enterococcus</i> sp. | <i>Enterococcus faecium</i> | 2.3 |
| 2291 | <i>Enterococcus</i> sp. | <i>Enterococcus faecium</i> | 2.3 |
| 10076 | <i>Enterococcus</i> sp. | <i>Enterococcus faecium</i> | 2.3 |
| 10131 | <i>Enterococcus</i> sp. | <i>Enterococcus faecium</i> | 2.1 |
| 10147 | <i>Enterococcus</i> sp. | <i>Enterococcus faecium</i> | 2.5 |
| 195 | <i>Enterococcus</i> sp. | <i>Enterococcus avium</i> | 2.1 |
| 2110 | <i>Enterococcus</i> sp. | <i>Enterococcus hirae</i> | 2.5 |
| 867 | <i>S. equinus</i> | <i>Lactococcus garvieae</i> | 2.1 |
| 5109 | <i>Enterococcus</i> sp. | <i>Lactococcus garvieae</i> | 1.9 |
| 5118 | <i>S. equinus</i> | <i>Lactococcus garvieae</i> | 2.1 |
| 10048 | <i>S. equinus</i> | <i>Lactococcus garvieae</i> | 2.1 |
| 10075 | <i>S. equinus</i> | <i>Lactococcus garvieae</i> | 2.0 |
| 10113 | <i>S. equinus</i> | <i>Lactococcus garvieae</i> | 2.2 |
| 2540 | <i>Enterococcus</i> sp. | <i>Lactococcus lactis</i> | 2.3 |
| 4584 | <i>Enterococcus</i> sp. | <i>Lactococcus lactis</i> | 2.4 |
| 10068 | <i>S. equinus</i> | <i>Lactococcus lactis</i> | 2.3 |
| 10073 | <i>S. equinus</i> | <i>Lactococcus lactis</i> | 2.2 |
| 10092 | <i>Enterococcus</i> sp. | <i>Lactococcus lactis</i> | 2.2 |
| 10127 | <i>Enterococcus</i> sp. | <i>Lactococcus lactis</i> | 2.2 |
| 206 | <i>Streptococcus</i> sp. | <i>Aerococcus viridans</i> | 2.0 |
| 5215 | <i>Enterococcus</i> sp. | <i>Aerococcus viridans</i> | 2.0 |
| 10139 | <i>S. equinus</i> | Not identified | |

Gram-negative bacteria

| Isolate number | Biochemical identification | Identification by MALDI-TOF MS | MALDI-TOF MS score |
|----------------|----------------------------|--------------------------------|--------------------|
| 23 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.2 |
| 219 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 3397 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 3536 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.4 |
| 3888 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 3890 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.2 |
| 3922 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 8905 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 10117 | <i>Escherichia coli</i> | <i>Escherichia coli</i> | 2.3 |
| 2333 | <i>Pseudomonas</i> sp. | <i>Pseudomonas aeruginosa</i> | 2.3 |
| 2558 | <i>Pseudomonas</i> sp. | <i>Pseudomonas aeruginosa</i> | 2.4 |
| 3946 | <i>Pseudomonas</i> sp. | <i>Pseudomonas aeruginosa</i> | 2.3 |
| 5255 | <i>Salmonella</i> sp. | <i>Salmonella</i> sp. | 2.3 |
| 5300 | <i>Salmonella</i> sp. | <i>Salmonella</i> sp. | 2.4 |
| 5432 | <i>Salmonella</i> sp. | <i>Salmonella</i> sp. | 2.1 |

| | | | |
|------|-------------------------|-------------------------------------|-----|
| 50 | <i>Enterobacter</i> sp. | <i>Leclercia adecarboxylata</i> | 2.3 |
| 220 | <i>Klebsiella</i> sp. | <i>Klebsiella pneumoniae</i> | 2.2 |
| 3535 | <i>Klebsiella</i> sp. | <i>Klebsiella oxytoca</i> | 2.2 |
| 7313 | <i>Klebsiella</i> sp. | <i>Klebsiella variicola</i> | 2.2 |
| 3945 | <i>Citrobacter</i> sp. | <i>Citrobacter freundii</i> | 2.3 |
| 3951 | <i>Klebsiella</i> sp. | <i>Enterobacter cloacae</i> | 2.3 |

Supplementary Table S2. Results of the biochemical tests of the catalase-negative, Gram-positive cocci and Gram-negative bacteria.

Catalase-negative, Gram-positive cocci

| Isolate number | Hem | CAMP | Esc | BE | Hip | NaCl | Inu | Trea | Biochemical Identification |
|----------------|-------|------|-----|----|-----|------|-----|------|----------------------------|
| 3370 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 4203 | - | + | - | - | - | + | + | ND | <i>S. agalactiae</i> |
| 4635 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 4664 | +beta | - | - | - | + | + | + | ND | <i>Streptococcus</i> sp. |
| 4720 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 6730 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 8136 | +beta | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 8416 | +beta | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10039 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10041 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10043 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10046 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10047 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10050 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10052 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10054 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10055 | +beta | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10056 | +beta | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10057 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10058 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10060 | +beta | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10062 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |

| | | | | | | | | | |
|-------|-------|---|---|---|---|---|---|----|--------------------------|
| 10063 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10064 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10066 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10067 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10069 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10070 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10072 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10074 | - | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10077 | - | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10078 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10089 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10091 | - | - | - | - | + | + | + | + | <i>Streptococcus</i> sp. |
| 10116 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10114 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10119 | +beta | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10120 | - | + | - | - | + | + | + | - | <i>S. agalactiae</i> |
| 10121 | +beta | + | - | - | + | - | + | + | <i>S. agalactiae</i> |
| 10123 | +beta | + | - | - | + | + | + | - | <i>S. agalactiae</i> |
| 10125 | - | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10126 | +beta | + | - | - | + | + | + | + | <i>S. agalactiae</i> |
| 10151 | +beta | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10156 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10157 | +beta | + | - | - | + | - | + | ND | <i>S. agalactiae</i> |
| 10158 | +beta | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10159 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10160 | +beta | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 10162 | +beta | + | - | - | + | - | + | ND | <i>S. agalactiae</i> |

| | | | | | | | | | |
|-------|---|---|---|---|---|---|---|----|-------------------------|
| 10163 | - | + | - | - | + | + | + | ND | <i>S. agalactiae</i> |
| 2851 | - | + | - | + | + | - | - | ND | <i>S. uberis</i> |
| 3352 | - | + | + | + | + | - | - | ND | <i>S. uberis</i> |
| 3433 | - | + | + | + | + | + | - | ND | <i>S. uberis</i> |
| 3674 | - | - | - | - | - | - | + | ND | <i>S. dysgalactiae</i> |
| 4709 | - | + | - | + | - | - | - | ND | <i>S. uberis</i> |
| 5147 | - | + | + | + | + | - | - | ND | <i>S. uberis</i> |
| 5225 | - | + | + | + | - | - | + | ND | <i>S. uberis</i> |
| 5381 | - | - | + | + | - | - | - | ND | <i>S. uberis</i> |
| 5575 | - | - | + | + | + | - | - | ND | <i>S. uberis</i> |
| 8139 | - | + | + | + | + | - | + | ND | <i>S. uberis</i> |
| 8490 | - | + | + | + | - | - | - | ND | <i>S. uberis</i> |
| 8739 | - | + | + | + | + | - | - | ND | <i>S. uberis</i> |
| 8945 | - | + | - | - | + | - | - | ND | <i>S. agalactiae</i> |
| 10040 | - | - | + | + | + | - | - | + | <i>S. uberis</i> |
| 10042 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10045 | - | - | + | + | + | - | - | + | <i>S. uberis</i> |
| 10053 | - | + | + | + | + | - | - | + | <i>S. uberis</i> |
| 10065 | - | + | + | + | + | - | - | + | <i>S. uberis</i> |
| 10071 | - | - | + | + | + | - | - | + | <i>S. uberis</i> |
| 10081 | - | + | + | + | + | + | - | + | <i>S. uberis</i> |
| 10082 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10083 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10084 | - | - | + | + | - | - | + | + | <i>S. uberis</i> |
| 10085 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10093 | - | - | + | + | + | + | - | + | <i>Enterococcus</i> sp. |
| 10095 | - | - | + | + | + | + | - | + | <i>Enterococcus</i> sp. |

| | | | | | | | | | |
|-------|-------|---|---|---|---|---|---|----|--------------------------|
| 10108 | - | - | + | - | + | - | + | + | <i>S. uberis</i> |
| 10109 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10110 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10128 | - | - | + | + | - | - | - | + | <i>S. equinus</i> |
| 10130 | - | - | + | + | + | - | + | + | <i>S. uberis</i> |
| 10132 | - | - | + | - | + | - | + | + | <i>S. uberis</i> |
| 10133 | - | - | + | - | + | - | + | + | <i>S. uberis</i> |
| 10134 | - | - | + | - | + | - | + | + | <i>S. uberis</i> |
| 10135 | - | + | + | + | + | + | - | ND | <i>S. uberis</i> |
| 10136 | - | - | + | - | + | - | + | ND | <i>S. uberis</i> |
| 10146 | - | - | + | + | + | - | + | ND | <i>S. uberis</i> |
| 10148 | - | - | + | + | + | - | + | ND | <i>S. uberis</i> |
| 10149 | +beta | + | + | + | + | + | - | ND | <i>S. uberis</i> |
| 10150 | +beta | + | + | + | + | + | - | ND | <i>S. uberis</i> |
| 10153 | +alfa | + | + | + | + | - | - | ND | <i>S. uberis</i> |
| 10154 | - | + | + | + | + | - | + | ND | <i>S. uberis</i> |
| 10155 | +alfa | + | + | + | + | + | - | ND | <i>S. uberis</i> |
| 3672 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 4579 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 5211 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 5374 | +beta | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 5408 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 8140 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 10044 | - | - | - | - | - | - | - | + | <i>S. dysgalactiae</i> |
| 10079 | +alfa | - | - | - | - | - | - | + | <i>S. dysgalactiae</i> |
| 10080 | - | - | - | - | - | + | + | + | <i>Streptococcus</i> sp. |
| 10094 | +alfa | - | - | - | - | - | - | + | <i>S. dysgalactiae</i> |

| | | | | | | | | | |
|-------|-------|---|---|---|---|---|---|----|--------------------------|
| 10140 | - | - | - | - | - | + | + | ND | <i>Streptococcus</i> sp. |
| 10142 | - | - | - | - | - | + | - | ND | <i>Streptococcus</i> sp. |
| 10143 | - | - | - | - | - | - | + | ND | <i>S. dysgalactiae</i> |
| 10144 | - | - | - | - | - | - | + | ND | <i>S. dysgalactiae</i> |
| 10145 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 10152 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 10164 | - | - | - | - | - | - | - | ND | <i>S. dysgalactiae</i> |
| 10087 | +alfa | - | + | - | - | - | + | + | <i>S. dysgalactiae</i> |
| 10088 | +alfa | - | + | - | + | - | + | ND | <i>S. uberis</i> |
| 10138 | +alfa | - | + | + | + | + | + | ND | <i>Enterococcus</i> sp. |
| 10141 | +alfa | - | + | - | + | + | + | ND | <i>S. uberis</i> |
| 10161 | +alfa | + | - | - | + | - | + | ND | <i>S. agalactiae</i> |
| 3754 | - | - | + | + | - | - | + | ND | <i>S. equinus</i> |
| 10086 | +alfa | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10122 | +alfa | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10061 | - | - | + | + | - | - | + | - | <i>S. equinus</i> |
| 198 | - | - | + | - | - | - | - | ND | <i>Streptococcus</i> sp. |
| 10049 | +alfa | - | - | - | + | - | + | - | <i>Streptococcus</i> sp. |
| 3472 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 3649 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 4239 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 10051 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10059 | - | - | + | + | - | + | + | - | <i>Enterococcus</i> sp. |
| 10090 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10111 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10112 | - | - | + | + | - | + | - | + | <i>Enterococcus</i> sp. |
| 10115 | +alfa | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |

| | | | | | | | | | |
|-------|-------|---|---|---|---|---|---|----|--------------------------|
| 10118 | - | - | + | + | - | + | - | + | <i>Enterococcus</i> sp. |
| 10124 | +alfa | - | - | - | + | - | - | - | <i>Streptococcus</i> sp. |
| 10129 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10137 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 223 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 2291 | - | - | + | + | - | + | - | ND | <i>Enterococcus</i> sp. |
| 10076 | +alfa | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10131 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10147 | +beta | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 195 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 2110 | - | - | + | + | - | + | - | ND | <i>Enterococcus</i> sp. |
| 867 | - | - | + | + | - | - | + | ND | <i>S. equinus</i> |
| 5109 | - | - | + | + | - | + | - | ND | <i>Enterococcus</i> sp. |
| 5118 | - | - | + | + | - | - | + | ND | <i>S. equinus</i> |
| 10048 | - | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10075 | +alfa | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10113 | - | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 2540 | - | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 4584 | - | - | + | + | - | + | - | ND | <i>Enterococcus</i> sp. |
| 10068 | - | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10073 | - | - | + | + | - | - | + | + | <i>S. equinus</i> |
| 10092 | - | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 10127 | +beta | - | + | + | - | + | + | + | <i>Enterococcus</i> sp. |
| 206 | - | - | - | + | - | + | + | ND | <i>Streptococcus</i> sp. |
| 5215 | +alfa | - | + | + | - | + | + | ND | <i>Enterococcus</i> sp. |
| 10139 | - | - | + | + | - | - | - | ND | <i>S. equinus</i> |

Hem: haemolysis; CAMP: CAMP test; Esc: esculin hydrolysis; BE: growth in bile-esculin agar; Hip: hipurate hydrolysis; NaCl: growth in 6.5% NaCl; Inu: inulin; Trea: trehalose; ND: not determined.

Gram-negative bacteria

| Isolate number | Lac | MR / VP | H2S | Indol | Mot | Cit | O/F | TSI | Biochemical Identification |
|----------------|-----|---------|-----|-------|-----|-----|-----|--------|----------------------------|
| 23 | + | | - | + | - | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 219 | + | - | - | + | - | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 3397 | + | + | - | + | + | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 3536 | + | - | - | + | - | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 3888 | + | - | - | + | + | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 3890 | + | + | - | + | + | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 3922 | + | - | - | + | - | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 8905 | + | - | - | + | + | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 10117 | + | | - | + | - | - | +/+ | A/A,G | <i>Escherichia coli</i> |
| 2333 | - | - | - | - | - | + | +/- | K/K | <i>Pseudomonas sp.</i> |
| 2558 | - | - | - | + | + | + | +/- | K/K | <i>Pseudomonas sp.</i> |
| 3946 | - | - | - | - | + | + | +/- | K/K | <i>Pseudomonas sp.</i> |
| 5255 | - | + | + | - | + | + | +/+ | K/A,S+ | <i>Salmonella sp.</i> |
| 5300 | - | - | + | - | + | + | +/+ | K/A,S+ | <i>Salmonella sp.</i> |
| 5432 | - | + | + | - | + | - | +/+ | K/A,S+ | <i>Salmonella sp.</i> |
| 50 | + | + | - | + | + | - | +/+ | A/A,G | <i>Enterobacter sp.</i> |
| 220 | + | - | - | - | - | - | +/+ | A/A,G | <i>Klebsiella sp.</i> |
| 3535 | + | - | - | + | - | + | +/+ | A/A,G | <i>Klebsiella sp.</i> |
| 7313 | + | - | - | - | - | + | +/+ | A/A,G | <i>Klebsiella sp.</i> |
| 3945 | + | + | + | - | + | + | +/+ | A/A,S+ | <i>Citrobacter sp.</i> |
| 3951 | + | - | - | - | + | + | +/+ | A/A,G | <i>Klebsiella sp.</i> |

Lac: lactose; MR: methyl red; VP: Voges-Proskauer test; H₂S: hydrogen sulphide; Mot: motility; Cit: citrate; O/F: oxidation/fermentation; TSI: Triple Sugar Iron test; A: acid; K: alkaline; G: gas production; S⁺: hydrogen sulphide production.