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“*Collinsella vaginalis*” sp. nov., a new bacterial species cultivated from human female genital tract



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ABSTRACT

We present a brief description of “*Collinsella vaginalis*” strain P2666 (=CSUR P2666), a new bacterium that was cultivated from the vaginal sample of a 26-year-old woman affected from bacterial vaginosis.

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As part of the study of the human microbiota thanks to the approach of microbial culturomics [1], we analyzed the vaginal flora of women with bacterial vaginosis [2]. In May 2015, we cultivated from the vaginal swab of a 26 year-old French patient a bacterial strain that could not be identified using matrix-assisted laser desorption-ionization time-of-flight mass spectrometry (Microflex spectrometer, Bruker Daltonics, Leipzig, Germany) [3]. The study was authorized by the local ethics committee of the IFR48 (Marseille, France; agreement 09-022). The patient gave also her written consent.

The initial growth of strain Marseille P2666 was obtained at 37 °C under anaerobic conditions after 7 days of culture on CNA (Colistin and Naladixic Acid) agar (BD Diagnostics, Le Pont-de-Claix, France) after 15 days of pre-incubation in a blood culture bottle (BD Diagnostics) enriched with 4 ml of rumen that was filter-sterilized through at 0.2 µm pore filter (Thermo Fisher Scientific, Villebon-sur-Yvette, France) and 3 ml of sheep blood (bioMérieux, Marcy l’Etoile, France). Bacterial cells are rod-shaped Gram-positive, strictly anaerobic, non-motile, and non-spore-forming with a mean diameter of 0.4 µm and a mean length of 1.8 µm. After 2 days of incubation at 37 °C under anaerobic conditions on blood agar (bioMérieux), colonies are grey, circular, and

opaque with a diameter of 0.5–1.2 mm. Strain Marseille P2666 exhibited neither oxidase nor catalase activity.

The 16S rDNA sequence was obtained after amplification using the universal primer pair (fD1 and rp2) and a 3130-XL sequencer (Applied Biosciences, Saint-Aubin, France), as previously reported [4]. 16S rRNA gene sequence-based identification of strain Marseille P2666 exhibited 96.08% of identity with *Collinsella intestinalis* strain JCM 10643 (GenBank accession number NR_113165), the phylogenetically closest bacterium with a validly published name (Fig. 1). As this sequence was below the 98.7% threshold to define a new species [5], strain Marseille P2666 was considered as a new species within the *Collinsella* genus in the *Coriobacteriaceae* family. Created in 1999, the genus *Collinsella* contains currently 4 species [6]; all were isolated from human faeces.

Strain Marseille P2666 presents a 16S rRNA divergence around 3.8% with its phylogenetically closest species [7], we propose that strain Marseille P2666 may be the representative of a novel species named “*Collinsella vaginalis*” sp. nov. (va.gi.na’lis. L. n. vagina sheath, vagina; L. masc. suff. -alis suffix denoting pertaining to; N.L. masc. adj. vaginalis pertaining to vagina, of the vagina). Strain Marseille P2666^T is the type strain of the new species “*Collinsella vaginalis*” sp. nov.

MALDI-TOF MS spectrum accession number. The MALDI-TOF MS spectrum of *Collinsella vaginalis* is available at <http://www.mediterranee-infection.com/article.php?laref=256&titre=urms-database>.

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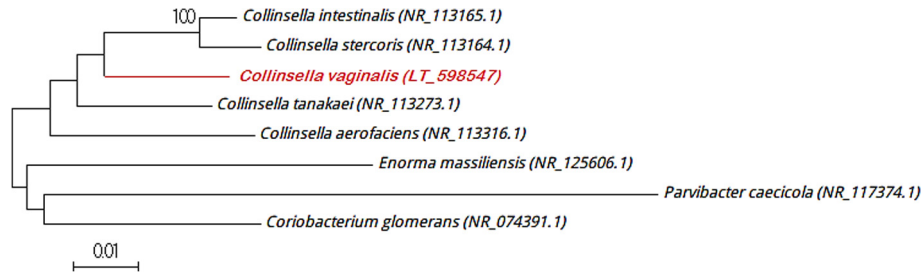


Fig. 1. Phylogenetic tree highlighting the position of “*Collinsella vaginalis*” strain Marseille P2666^T relative to other closest species. GenBank accession numbers are indicated after the name. Sequences were aligned using Muscle v3.8.31 with default parameters and phylogenetic inferences were obtained using neighbor-joining method with 500 bootstrap replicates, within MEGA6 software. Only bootstrap bigger than 95% are shown. The scale bar indicates a 1% nucleotide sequence divergence.

Nucleotide sequence accession number. The 16S rRNA gene sequence was deposited in EMBL-EBI under accession number LT598547.

Deposit in culture collection. Strain Marseille P2666 was deposited in the “Collection de Souches de l’Unité des Rickettsies” (CSUR, WDCM 875) under number P2666.

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