

'*Clostridium mediterraneense*,' a new bacterial species isolated from the human gut

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Abstract

We report the main characteristics of '*Clostridium mediterraneense*' sp. nov., strain Marseille-P2434^T (CSUR P2434), a new species within the genus *Clostridium*. This strain was isolated from the gut microbiota of a 66-year-old diabetic patient in Marseille, France.

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In November 2015, a 66-year-old diabetic patient was hospitalized in Timone Hospital, Marseille, France. He was diagnosed a malignant haemopathy. As part of the culturomics study [1], while the patient was asymptomatic, we isolated from his stool sample a bacterial strain that could not be identified by our systematic matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) screening on a MicroFlex spectrometer (Bruker Daltonics, Bremen, Germany) [2]. The study was approved by the Institut Fédératif de Recherche 48 (agreement 09-022, Marseille, France), and the patient's consent was obtained.

The culture of strain Marseille-P2434^T was achieved by preincubation of the stool specimen in an anaerobic blood culture vial (Becton Dickinson, Le Pont-de-Claix, France) at 37°C supplemented of 5% sheep's blood and 5 mL filter-sterilized rumen for 5 days. Isolated colonies were obtained by subculture on 5% sheep's blood-enriched Columbia agar (bioMérieux, Marcy l'Etoile, France) at 37°C in anaerobic atmosphere using AnaeroGen (bioMérieux) after 48 hours. The

colonies were circular, beige and nonhaemolytic with a diameter of about 1.0 mm after 3 days of incubation on 5% sheep's blood agar. The strain Marseille-P2434^T is a strict anaerobic, motile and Gram-positive bacterium, rod shaped (0.6–0.8 µm × 3.5–5.5 µm) and spore forming. Catalase and oxidase were negative. A molecular identification was performed by sequencing the complete 16S rRNA gene using a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France) and the fDI–rP2 primers as previously described [3]. The obtained sequence was 95.2% similar to the 16S rRNA gene sequence of *Clostridium perfringens* ATCC 13124 (GenBank accession no. CP000246), the phylogenetically closest species with standing in nomenclature (Fig. 1).

According to the 16S rRNA gene sequence similarity for species demarcation of prokaryotes [4], we propose that strain Marseille-P2434^T is representative of a new species within the *Clostridium* genus, for which we propose the name '*Clostridium mediterraneense*' sp. nov. (me.di.ter.rane.ense, L. fem. adj. *mediterraneense*, for the Mediterranean Sea, in front of which the city of Marseille is located, where strain Marseille-P2434^T was isolated).

MALDI-TOF MS spectrum

The MALDI-TOF MS spectrum of '*C. mediterraneense*' is available online (<http://www.mediterraneeinfection.com/article.php?leref=256&titre=urms-database>).

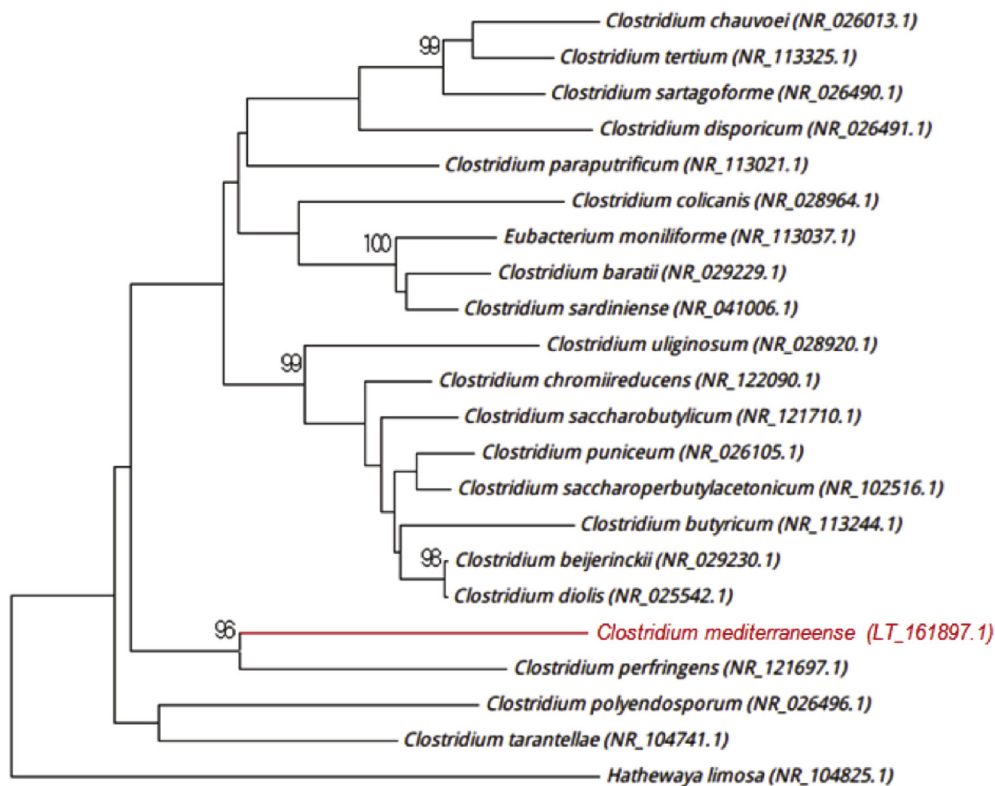


FIG. 1. Phylogenetic tree highlighting position of ‘*Clostridium mediterraneense*’ strain Marseille-P2434^T (red) relative to other phylogenetically close members of family *Clostridiaceae*. Numbers at nodes are percentages of bootstrap values obtained by repeating analysis to generate majority consensus tree 500 times. Only values >95% are displayed. Scale bar represents 2% nucleotide sequence divergence.

Nucleotide sequence accession number

The 16S rRNA gene sequence was deposited in GenBank under accession number LT161897.

Deposit in a culture collection

Strain Marseille-P2434^T was deposited in the Collection de Souches de l’Unité des Rickettsies (CSUR, WDCM 875) under number P2434.

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Conflict of Interest

None declared.

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