NEW SPECIES

‘Peptoniphilus raoultii’ sp. nov., a new species isolated from human female genital tract

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Abstract

We report the principal characteristics of ‘Peptoniphilus raoultii’ strain KHD4 (= CSUR P0110), a new member of the Peptoniphilus genus. Strain KHD4 was isolated from the vaginal flora of a 33-year-old woman with bacterial vaginosis. © 2016 The Author(s). Published by Elsevier Ltd on behalf of European Society of Clinical Microbiology and Infectious Diseases.

Keywords: Bacterial vaginosis, culturomics, genome, Peptoniphilus raoultii, vaginal flora

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As part of the study of the human microbiota by culturomics [1], we studied the diversity of the vaginal flora. We isolated from the vaginal flora of a 33-year-old French woman with bacterial vaginosis [2] a new strain of the family Peptoniphilaceae that could not be identified by matrix-assisted laser desorption-ionization time-of-flight mass spectrometry (MALDI-TOF MS) using a MicroFlex spectrometer (Bruker Daltonics, Leipzig, Germany) [3]. The patient provided a written consent and the agreement of the National Ethics Committee of the IFR48 (Marseille, France) was obtained (number 09-022).

The vaginal sample was pre-incubated in a blood culture bottle (BD Diagnostics, Le Pont-de-Clax, France) supplemented with 4 mL of rumen that was filter-sterilized through a 0.2-μm pore filter (Thermo Fisher Scientific, Villebon-sur-Yvette, France) and 3 mL of sheep blood (bioMérieux, Marcy l’Etoile, France) at 37°C for 24 h. After these 24 h of pre-incubation in a blood culture bottle, 50 μL of the supernatant was inoculated on Colistin Nalidixic Acid (CNA) agar (BD Diagnostics) and trypticase soy agar (BD Diagnostics) and incubated in anaerobic conditions at 37°C. After 4 days incubation on both CNA and trypticase soy agar plates, strain KHD4 was isolated. On Columbia agar supplemented with 5% sheep blood (bioMérieux), colonies of strain KHD4 are grey and translucent with a diameter of 1–1.5 mm. Bacterial cells are Gram-positive cocci with a diameter ranging from 0.7 to 0.8 μm. Strain KHD4 exhibited neither catalase nor oxidase activities.

The 16S rRNA gene was amplified and sequenced using the universal primers (fD1 and rp2) and a 3130-XL sequencer (Applied Biosciences, Saint Aubin, France), as described elsewhere [4]. Strain KHD4 exhibited a 96% sequence identity with Peptoniphilus lacrimalis (GenBank NR_041938.1), the phylogenetically closest validated species (Fig. 1). This value was lower than the 98.7% 16S rRNA gene sequence threshold proposed by Stackebrandt and Elbers [5] to define a new species without carrying out DNA–DNA hybridization, and suggests that strain KHD4 is the type strain of a new species within the family Peptoniphilaceae in the phylum Firmicutes. The Peptoniphilus genus was created by Ezaki et al. in 2001 [6]. This genus is one of the three genera obtained after the subdivision of the Peptostreptococcus genus [6]. Currently, the Peptoniphilus genus includes 13 species that are all strictly anaerobic [7]. Bacterial species from the Peptoniphilus genus have been reported from diverse human clinical specimens [6]. For example, Peptoniphilus lacrimalis, the phylogenetically closest validated species of strain KHD4, was first isolated from lacrimal gland [8].
As strain KHD4 is >4% divergent in the 16S rRNA gene sequence with its closest phylogenetic neighbour [9], we propose that it may be the representative strain of a novel species named ‘Peptoniphilus raoultii’ (ra.oul’ti.i. N. L. masc. gen. n. raoultii of Raoult, named after French scientist Professor Didier Raoult for his outstanding contribution to medical microbiology). Strain KHD4 is the type strain of the new species of ‘Peptoniphilus raoultii’ sp. nov.

MALDI-TOF-MS Spectrum Accession Number

The MALDI-TOF-MS spectrum of ‘Peptoniphilus raoultii’ is available at http://www.mediterranee-infection.com/article.php?laref=256&titre=urms-database.

Nucleotide Sequence Accession Number

The 16S rRNA gene sequence was deposited in EMBL-EBI under the following accession number LN998068.1 (strain KHD4).

Deposit in Culture Collection

Our isolate ‘Peptoniphilus raoultii’ was deposited in the ‘Collection de Souches de l’Unité des Rickettsies’ (CSUR, WDCM 875) under number P0110.

Conflict of Interest

The authors have no conflicts of interest to declare.

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