

MICROBIOTEC 19

December 5th-7th, 2019
University of Coimbra (Pólo II)

CONGRESS OF MICROBIOLOGY
AND BIOTECHNOLOGY 2019

BOOK OF ABSTRACTS

**SPM**
Sociedade Portuguesa de Microbiologia

spbt
sociedade
portuguesa de
biotecnologia

1 2  9 0
UNIVERSIDADE D
COIMBRA

P231. *Raoultella ornithinolytica*: an opportunistic pathogen in the oral cavity of chronic kidney disease patients

Carolina F. F. A. Costa^{1,2,3}, Carla Campos⁴, Ana Merino^{3,5,6}, Nádia Silva⁷, Raquel B. R. Mesquita¹, António O. S. S. Rangel¹, Benedita Sampaio-Maia^{2,3}

¹ Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Porto, Portugal

² Faculdade de Medicina Dentária, Universidade do Porto, Porto, Portugal

³ INEB-Instituto de Engenharia Biomédica, i3S-Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal

⁴ Instituto Português de Oncologia do Porto Francisco Gentil (IPO), Porto, Portugal

⁵ Universitat Autònoma de Barcelona, Barcelona, Espanha

⁶ Hospital Universitari Doctor Josep Trueta, Girona, Espanha

⁷ Serviço de Nefrologia, Centro Hospitalar Universitário de São João, Porto, Portugal

E-mail: costa.carolina.1996@gmail.com

Raoultella ornithinolytica, formerly *Klebsiella ornithinolytica*, is a histamine-producing enterobacteria commonly isolated from fish and insects. Despite being often misidentified as *Klebsiella* sp. and consequently underreported, this species is emerging as a virulent pathogen of both nosocomial and community-acquired infections. The compromised immunity associated with the uremic state experienced in chronic kidney disease (CKD) makes patients more prone to infection than other populations. For this reason, colonization by clinically relevant Enterobacteriaceae, major agents of both nosocomial and dialysis-associated infections, may constitute a serious risk. As so, this work aimed to assess the prevalence of clinically relevant enterobacteria in the oral cavity of CKD patients.

Saliva samples were collected from 44 CKD patients undergoing peritoneal dialysis (CKD-PD) and from 37 healthy volunteers and were cultured in MacConkey Agar up to 3 hours after collection. After 48 hours of growth at 37°C, all distinct-looking colonies were reisolated and were then identified using MALDI-TOF MS. The prevalence of the identified species was then assessed per participant.

In comparison to healthy controls, CKD-PD patients exhibited a much higher prevalence (43.2% vs. 10.8%, $p=0.003$) and diversity (7 vs. 3 isolated species) of Enterobacteriaceae in the oral cavity. Out of all the species isolated, only the prevalence of *Raoultella ornithinolytica* varied significantly between groups ($p= 0.001$). Approximately 30% of CKD-PD patients were colonized by *R. ornithinolytica* in the oral cavity, while this species was completely absent from the saliva of healthy controls.

These results suggest that CKD may induce a dysbiosis of the oral microbiome, leading to the proliferation of clinically relevant Enterobacteriaceae, such as *R. ornithinolytica*. This species has been reported as an agent of peritonitis and its presence in the oral cavity of immunocompromised CKD patients might constitute a risk for their well-being.