

Micro Biotec'13

PORTUGUESE CONGRESS OF
MICROBIOLOGY AND BIOTECHNOLOGY

6th - 8th December | Aveiro Portugal

Abstracts Book



Environmental Microbiology and Biotechnology

P105

BACILLUS INVICTUS SP. NOV., A NEW SPECIES ISOLATED FROM MEDICINAL PRODUCTS IN PORTUGAL

Raquel Branquinho¹; Clara Sousa¹; Hugo Osório²; Luís Meirinhos-Soares³; João Lopes⁴; Amir Abdulmawjood⁵; Guenter Klein⁵; Manuela E. Pintado⁶; Luísa V. Peixe¹

¹REQUIMTE, Laboratório de Microbiologia, Faculdade de Farmácia da Universidade do Porto, Porto, Portugal

²Institute of Molecular Pathology and Immunology of the University of Porto, IPATIMUP, Porto, Portugal

³Direção de Comprovação da Qualidade do INFARMED I.P., Lisboa, Portugal

⁴REQUIMTE, Laboratório de Química Aplicada, Departamento de Ciências Químicas, Faculdade de Farmácia da Universidade do Porto, Porto, Portugal

⁵Institute of Food Quality and Food Safety – Hannover, Germany

⁶CBQF– Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal

Three Gram-positive, rod-shaped endospore-forming *Bacillus* isolates Bi.FFUP1, Bi.FFUP2, and Bi.FFUP3 recovered in Portugal from medicines' contaminants were subjected to a polyphasic study. Acid production from mannose and its absence when inositol, mannitol, methyl α -D-glucopyranoside, maltose, turanose and L-tryptophan is tested, discriminate these new isolates from its closest relatives, *Bacillus pumilus* and *Bacillus safensis*. Additionally, a significant different protein and carbohydrate signature was evidenced by spectroscopic techniques. PCA (principal component analysis) of this spectral data clearly delineated the novel species isolates. 16S rDNA analysis placed isolates within the genus *Bacillus* with highest similarities ($\geq 99.7\%$) with *B. safensis* and *B. pumilus*. Nevertheless, only 49–50% DNA relatedness (DDH studies) was observed between Bi.FFUP1 and *B. safensis* FO-036bT. Variable DDH values were obtained when Bi.FFUP1 was compared with *B. pumilus* ATCC 14884 ($39.75\% \pm 0.35$) and ATCC 7061^T ($69.40\% \pm 0.2$), despite the genotypic and phenotypic similarity of these two *B. pumilus* strains, highlighting the ambiguities in the taxonomic grouping based on a strict DDH cut-off. However, novel species isolates share 93.0% *gyrB* similarity with *B. pumilus* ATCC 14884 and 7061^T and 91.3% with *B. safensis* FO-036b^T. Further, *rpoB* similarity of 96.4% with close reference strains, together with *gyrB* and *rpoB* phylogenetic tree topology supported the delineation of a new species. On the basis of phenotypic characteristics (metabolic profile, protein and carbohydrate content) and phylogenetic analyses of *rpoB* and *gyrB* sequences, the three isolates represent a novel species of *Bacillus* genus, for which the name *Bacillus invictus* sp. nov. is proposed, with strain Bi.FFUP1 as the type strain.