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# Abstract Book

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## SHORT CHAIN FATTY ACID PRODUCING *FAECALIMONAS* SP. NGB245 ISOLATED FROM HUMAN GUT MODULATES NEUROSIGNALING IN *CAENORHABDITIS ELEGANS*

Miroslav Dinić,<sup>1</sup> Aleksandar Bisenić,<sup>1</sup> Stefan Jakovljević,<sup>1</sup> Branislav Nastasijević,<sup>2</sup>  
Emilija Brdarić,<sup>1</sup> Svetlana Soković Bajić,<sup>1</sup> Jelena Đokić,<sup>1</sup> Amarela Terzić-Vidojević,<sup>1</sup> Nataša Golić<sup>1</sup>

<sup>1</sup>Group for Probiotics and Microbiota-Host Interaction, Institute of Molecular Genetics  
and Genetic Engineering, University of Belgrade, Belgrade, Serbia;

<sup>2</sup>Department of Physical Chemistry, Vinca Institute of Nuclear Sciences,  
University of Belgrade, Belgrade, Serbia

**Introduction:** Gut-brain axis has been identified as an important target for prevention of neurodegenerative and psychiatric disease. To date, specific microbial strains resident in the intestinal ecosystem have been described to modulate several behaviour-related functions in the host. *Faecalimonas* sp. is anaerobic bacteria affiliated with the family *Lachnospiraceae*, which represents a highly prevalent beneficial bacteria in the human gut and have potential to be used as next generation probiotic.

**Methods:** *Faecalimonas* sp. NGB245 was isolated from human fecal material by pre-inoculation in BACTEC media followed by serial dilutions spreading on Columbia Blood Agar supplemented with cysteine and sodium thioglycolate in Whitley Anaerobic Workstation. Production of short chain fatty acid (SCFA) was detected after bacterial growth in Columbia broth supplemented with cellobiose by HPLC. Host response was followed on *Caenorhabditis elegans* model by evaluated expression of the genes involved in neurosignaling by qPCR.

**Results:** We showed that *Faecalimonas* sp. NGB245 exhibits high capacity of production of SCFA including acetate (12,17 mM), propionate (3,02 mM) and butyrate (10,33 mM). Moreover, *C. elegans* fed with *Faecalimonas* sp. NGB245 showed higher expression of the genes involved in neurotransmitter synthesis (*tph-1*, *cat-2*), neurotransmitter release (*unc-64*, *snb-1*, *snt-1*), neurotransmitter receptor (*npr-1*) and different classes of neuropeptides (*flp-18*, *flp-21*, *nlp-28*, *nlp-29*) in comparison to worms fed with *Escherichia coli* OP50, as a standard laboratory food.

**Conclusion:** The obtained results imply that *Faecalimonas* sp. NGB245 isolate could be considered as next generation probiotic to be used in prevention and treatment of neurodegenerative and psychiatric diseases.

**Key words:** *Faecalimonas* sp; next generation probiotics; SCFA; *Caenorhabditis elegans*; neuropeptides

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