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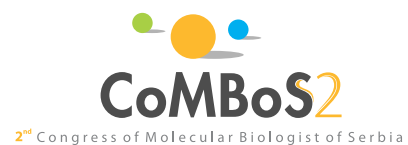
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SUGARS AND THEIR SUBSTITUTES INCREASE PATHOGENICITY OF *PSEUDOMONAS AERUGINOSA*

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Introduction: Different sugars are commonly used in the diet, but little is understood about the various effects of human health that they can affect. Hence, the impact of sugars and their substitutes used in diet on the development of virulence in *Pseudomonas aeruginosa* PAO1 was investigated. Sugars (fructose, demerara, coconut sugar, and cane sugar) and sugar substitutes (erythritol and stevia) were selected. The genes from three *P. aeruginosa* QS networks (*las* - *lasI*, *lasR*; *rhl* - *rhlI*, *rhlR*; *PQS* - *pqsA*, *mvfR*) were used for RT-qPCR analysis in order to investigate whether the expression of these genes changes. In this work, the focus is on the expression of genes involved in QS and the ability to form biofilms (a type of structured community of microorganisms that is attached to the surface and connected by an exopolysaccharide matrix), as well as determining minimal inhibitory concentration of antibiotics in presence of tested compounds.

Methods: Microdilution assay, Antibiofilm assay, RT- qPCR

Results: In the presence of tested sugars and their substitutes, the minimum inhibitory concentration of commercial antibiotics increased, as well as the percentages of biofilm formation (for instance, the percentage of biofilm formation is 171% in the presence of coconut sugar). Furthermore, exposure of *P. aeruginosa* to tested compounds caused the greatest increase in expression of virulence associated with the *lasI* and *pvdF* genes.

Conclusion: More awareness and research is needed to highlight the effects sugars can have on *P. aeruginosa* and to propose new strategies to reduce this negative aspect.

Key words: sugars; sugar substitutes; virulence factors; *Pseudomonas aeruginosa*, gene expression

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