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podpory Technologické agentury ČR v rámci
Programu Národního centra kompetence
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BIOCIRKL

Národní centrum kompetence
„Biorafinace a cirkulární ekonomika pro udržitelnost“



NÁRODNÍ
PLÁN
OBNOVY

TN02000044/1 – V9

GENOMOVÁ A FENOTYPOVÁ

CHARAKTERIZACE ENDOFYTNÍ

BAKTERIE *PANTOEA*

***AGGLOMERANS*, IZOLOVANÉ Z**

CHMELE

(VÝSTUP TYPU O)

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Projekt BIOCIRKL (TN02000044) je řešen s finanční podporou TA ČR.

Prezentace posteru s anglickým názvem „Genomic and Phenotypic Characterization of the endophytic bacterium *Pantoea agglomerans* isolated from hops“ na konferenci Kostelecké inspirování 2023, pořádané ČZU ve dnech 27.-28.11. 2023 v Kostelci nad Černými lesy

Abstrakt posteru:

The poster presents new information on *Pantoea agglomerans* isolated from fresh hops, which shows potential for use in sustainable agriculture based on genome and phenotype analysis. Currently, it seems essential to study the microorganisms that inhabit plants and provide them with natural protection to be able to use them as sustainable alternatives to agricultural chemicals. The Czech Republic is famous for its Pilsner beer, in which hop (*Humulus lupulus*) is irreplaceable feedstock. However, hop plant research has focused on topics other than the natural colonization of the hop plant by endo- and epiphytic bacteria. This study aims to demonstrate the versatile metabolism of *P.agglomerans* DBM 3697 isolated from fresh green hop cones in the Stekník hopyards (Czech Republic) along with identification of significant metabolites, as well as the complete genome and its comprehensive analysis, stressing plant growth promoting beneficial properties.

GENOMIC AND PHENOTYPIC CHARACTERIZATION OF THE ENDOPHYTIC BACTERIUM *PANTOEA AGGLOMERANS* ISOLATED FROM HOPS

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INTRODUCTION:

The poster presents new information on *Pantoea agglomerans* isolated from fresh hops, which shows potential for use in sustainable agriculture based on genome and phenotype analysis. Currently, it seems essential to study the microorganisms that inhabit plants and provide them with natural protection to be able to use them as sustainable alternatives to agricultural chemicals. The Czech Republic is famous for its Pilsner beer, in which hop (*Humulus lupulus*) is irreplaceable feedstock. However, hop plant research has focused on topics other than the natural colonization of the hop plant by endo- and epiphytic bacteria. This study aims to demonstrate the versatile metabolism of *P. agglomerans* DBM 3697 isolated from fresh green hop cones in the Stekník hopyards (Czech Republic) along with identification of significant metabolites, as well as the complete genome and its comprehensive analysis, stressing plant growth promoting beneficial properties.

PLANT GROWTH PROMOTION (PGP):

Table 1: PGP activities screened in culture assays

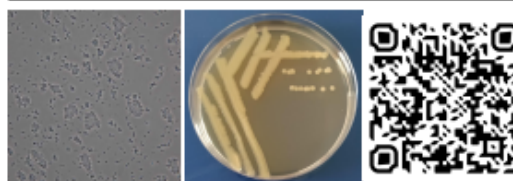
PLANT GROWTH PROMOTING ACTIVITIES	INTENSITY
Phosphate solubilization	Not detected
Amylolytic activity	+
Lipolytic activity	+
Pectinase activity	+
Proteolytic/peptidase activity	+++
Cellulase activity	+++
Siderophore formation	++
Nitrogen fixation	Not detected
IAA-like compounds production	++
Release of ammonium ions	+++

*IAA = indol-3-acetic acid

More information, such as phylogenetic *Pantoea agglomerans* tree and the PGP related genes will be available soon at Frontiers in Microbiology.



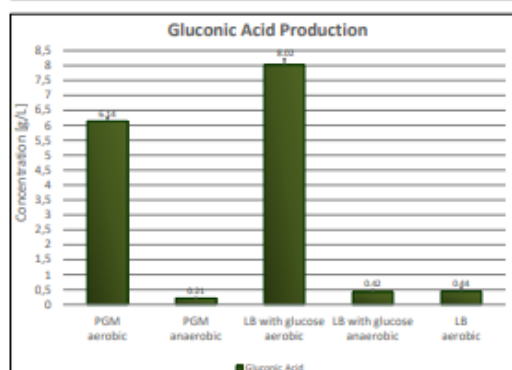
Pantoea agglomerans DBM 3697:



Genome assembly information of *Pantoea agglomerans* DBM 3697 can be found at:

https://www.ncbi.nlm.nih.gov/datasets/genome/GCF_020783495.1/

GLUCONIC ACID PRODUCTION:

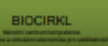


CONCLUSIONS:

Pantoea agglomerans, strain DBM 3697, isolated from hops exhibits potentially beneficial properties for the hop plant and will be further used for development of organic, biodegradable fertilizer.

ACKNOWLEDGEMENTS:

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