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Microbial exopolysaccharides as postbiotics for the development of new functional foods

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STATE OF THE ART

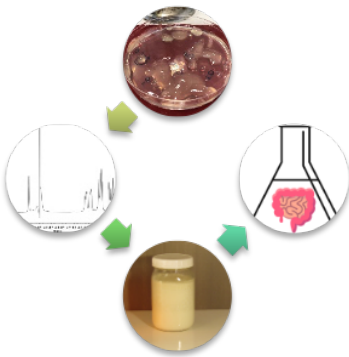
Bacterial exopolysaccharides (EPS) are postbiotics which have shown to possess specific bioactivities such as antioxidant, immunomodulatory and bifidogenic[1]. To date, it is not fully understood whether bioactivity is maintained in the food matrix and throughout the gastrointestinal transit. Indeed, their physicochemical characteristics are closely related to the molecular structure, which can be modified in different environmental conditions (e.g., acidic pH), influencing the expected technological and bioactive effects[2].

AIM OF THE STUDY

- To find and characterize new microbial exopolysaccharides (EPS) with appealing bioactivities to be used for the development of new functional foods
- To ascertain if the bioactivities are maintained during the processing and shelf-life and after *in vitro* digestion

ACTIVITY	Isolation of EPS+ strains	EPS production	EPS characterization	Food development
METHODS	• Sampling (fermented) foods • Qualitative screening • Strain identification	• Optimization of bioprocess conditions • Attenuation	• Chemical characterization (NMR, FTIR,…) • Bioactivity assays (antioxidant, prebiotic,…)	• Food characterization • Determination of bioactivity after processing, storage, *in vitro* digestion
OUTPUT	• New EPS-producing strains • Information relevant for QPS status	• Conditions for high EPS yields	• Correlation between structure and bioactivity	• New functional foods • Need for EPS protection?

Activity \ 4-month period	1	2	3	4	5	6
Screening of new EPS-producing strains						
Selection and characterization of bioactive molecules						
Development of new functional foods with EPS						
Thesis and Paper preparation						



References

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2. Wang LL, Wang LF, Ren XM, Ye XD, Li WW, Yuan SJ, Sun M, Sheng GP, Yu HQ, Wang XK (2012) pH dependence of structure and surface properties of microbial EPS, Environ Sci Technol 46: 737–744.