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Laurent Gal, Angela Rocio Ortiz Camargo, Dominique Garmyn, Pascal P. Piveteau

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ECOLOGY OF LISTERIA MONOCYTOGENES IN SOIL: EFFECT OF THE BIOTIC ENVIRONMENT ON SURVIVAL AND TRANSCRIPTOME RESHAPING.

L. Gal1, A. Ortiz Camargo2, D. Garmyn3, P. Piveteau4
1AgroSup Dijon, INRA UMR1347 Agroécologie, Dijon, France
2Univ. Bourgogne Franche Comté, INRA UMR1347 Agroécologie, Dijon, Colombia
3Univ. Bourgogne Franche Comté, INRA UMR1347 Agroécologie, Dijon, France
4Univ. Bourgogne Franche Comté, INRA UMR1347 Agroécologie, France, France

Backgrounds

Listeria monocytogenes is a bacterium found in many habitats such as soil, plants, animals, foodstuff and food processing facilities. Circulation between habitats is a source of its transmission to food and eventually to the consumer. Contaminated foodstuff is indeed the vector of listeriosis, a life-threatening disease mainly to immunocompromised people and pregnant women. One of the intriguing facets of Listeria monocytogenes is its ability to adapt its physiology to complex, heterogeneous habitats. With its complex chemistry, texture, dense microbiota and overall biotic fraction, soil is a nice example of such heterogeneous habitat. Persistence in many habitats suggests that L. monocytogenes is able to integrate a range of environmental cues in the circuitry of regulation of transcription.

Objectives

This study aimed at assessing in one hand extrinsic factors that shape the fate of L. monocytogenes in soil, and in the other hand the response of L. monocytogenes to the biotic environment found in soil.

Methods

The response of L. monocytogenes EGD-e to the biotic fraction of soil was investigated in irradiated and untreated microcosms through a combination of transcriptomic approaches and population dynamics.

Conclusions

The fate of L. monocytogenes is dependent on both abiotic and biotic characteristics and the latter have a major impact on the dynamics of the populations of L. monocytogenes in soil. Major transcriptome reshaping was observed where L. monocytogenes recruits its repertoire of transporters and specific pathways to access and utilise the available substrates. The biotic environment further affects transcriptome and triggers further regulation.