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Efficiency of genetic screening for identification of lactic acid bacteria for their nutritional properties

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The relationship between the lactic acid bacteria composing the microbiota of tropical starchy fermented foods and humans has been poorly investigated. Most of the studies focus on a combination of phenotypical (cells models, animals) and clinical trials. However, the increasing number of genomic data allows new strategies. Lactic acid bacteria (LAB) can synthesize molecules of interest during fermentation of food. The objective of this work was to screen the presence of around 50 genes involved in probiotic functions in a collection of 152 lactic acid bacteria isolated from an African fermented cereal based food called *bensaalga*, and in the metagenome of various starchy fermented foods. In this study, several primers have been designed allowing the detection of genes of interest by PCR. The genetic screening is efficient in determining the potential linked to simple functions (B vitamins and carotenoids synthesis, starch metabolism, tannin degradation), as in most

cases it allows to limit the number of phenotypical tests to the strain harbouring the genes of interest. On the contrary, more complex functions such as cell binding or bacterial survival, estimated *in vitro* (low pH, bile salts, cell models, surface plasmonic resonance imagery) revealed the limit of the approach. The genetic screening of the metagenomes shows that the traditional starchy fermented foods harbour a promising probiotic and nutritional potential.

Speaker Biography

Williams Turpin has completed his PhD in Microbiology from Montpellier II University (France), and Post-doctoral studies from University of Toronto (Canada). He is now a Research Associate at University of Toronto/Mount Sinai Hospital, currently working in the field of Human Genetics and its microbiome relationship in the context of inflammatory bowel diseases. He published six papers related to the field of Food Microbiology. His current work was acknowledged by five publications, with two of them published in high impact factor journals. He recently received one national (CDDW2015) and three international awards (UEGW2015, DDW2015-DDW2016).

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