Title: Ceno-antibiogram: community level antibiogram for the analysis of the antibiotic resistance of the gut microbiota after chronic fructose intake

Marina Robas Mora[1], Carlos Bocos[2], Maribel Panadero[2], Elena Fauste[2], Pedro A. Jiménez Gómez[1], Agustín Probanza Lobo[3].

[1] Microbiology Area, Pharmaceutical and Health Sciences Department, Faculty of Pharmacy, Universidad San Pablo CEU, Boadilla del Monte, Madrid, Spain.
[2] Biochemistry Area, Chemistry and Biochemistry Department, Faculty of Pharmacy, Universidad San Pablo CEU, Boadilla del Monte, Madrid, Spain.
[3] Plant physiology Area, Pharmaceutical and Health Sciences Department, Faculty of Pharmacy, Universidad San Pablo CEU, Boadilla del Monte, Madrid, Spain.

Fructose consumption has increased considerably in the last decades associated with its incorporation in sugary drinks and processed foods [1]. This increase in consumption has been related to cardiovascular diseases, obesity and diabetes [2]. Recently, it has been shown that the gut microbiota is directly related to diet. This link affects both the functional activity and the composition of the gut microbiota [3]. Thus, the consumption of this sugar could affect the expression and profile of antibiotic resistance of said microbiota. This fact evidences the growing scientific interest in knowing those factors that may negatively affect the increase in antibiotic resistance, among which could potentially include the effect of this sweetener on the gut microbiota and its consequences.

The contribution of the present work consists of the biotechnological adaptation of techniques traditionally used for the evaluation of antibiograms of clinical isolates (phenotypic expression of population resistance) for the study of the behavior of the intestinal microbiota against antibiotics (ceno-antibiogram, insofar as it concerns the study of the phenotypic expression of the antibiotic resistance of the community as a whole; "ceno-") [4]. In this study, male Sprague-Dawley rats were used from mothers who received water during pregnancy (CONTROL) or mothers who consumed fructose in the drinking water (FRUCTOSA) who, after reaching adulthood, consumed fructose for 21 days (CF and FF), fructose with salt (components of the Western diet) (CX and FX) or water (CC and FC) together with a standard solid diet. The cenoantibiogram (Epsilon test© and Vitek©) was studied in the feces of these animals. For the treatment of the data the Random Forest and Wilcoxon statistics were used.

The results of the gut microbial communities show an increase of Minimum Inhibitory Concentration (MIC) according to the following model: (CF) against piperacillin and amoxicillin; (FF) against cefuroxime and imipenem and (FX) against amoxicillin. Increases that, however, are not observed in the other groups (CC and CX).

Biography

Agustín Probanza is Doctor in Biological Sciences from the UCM, his research work has been developed in Microbial Ecology applied to improve plant production through plant-microorganism interaction. Pedro Jiménez has a PhD in Microbiology from the USP-CEU. His line of research has focused on the study of antibiotic resistance in pathogenic strains of human, animal and environmental origin. He is currently responsible for the Microbiology Area of the USP-CEU. Marina Robas her PhD in Microbiology, at the USP-CEU. Its line focuses on the ecological study

of complex microbial communities of different nature: environmental and clinical, to adapt techniques traditionally used to evaluate antibiotic resistance in populations, to the study of the community.

Email: marina.robasmora@gmail.com

Notes/Comments: The biography that is shown corresponds with the research group in environmental microbial biotechnology of the USP-CEU.**Presenting author details**

Full name: Marina Robas Mora
Contact number: 0034 620258184
Linked In account: Dra. Marina Robas
Session name/ number:
Category: (E-Poster)