Impact of cooking and species on intestinal fermentation patterns of vegetables in a Humanized in vitro model of the gastro intestinal tract.

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Background

Obesity and associated pathologies have dramatic consequences on patients’ live as well as high societal costs. Prebiotics and dietary fibre (DF) supplements are being investigated to reshape the intestinal microbial communities of obese patients. The efficacy of vegetables depends of their contents in soluble (SDF) and insoluble dietary fibre (IDF) and fructans, the fermentability of the fibre and the short chain fatty acids production they induce. These are influenced by the nature of the vegetable and whether they are consumed steamed or raw.

Objective

To compare the ability of gut microbiota of obese and lean patients (BMI > 30 and BMI < 25), to ferment DF and how different vegetables modulate fermentation patterns in a dual model combining enzymatic hydrolysis to an in vitro fermentation using faecal inoculums with six steamed vegetables.

Methods

ENZYMATIC HYDROLYSIS
To compare the ability of gut microbiota of obese and lean patients (BMI > 30 and BMI < 25), to ferment DF and how different vegetables modulate fermentation patterns in a dual model combining enzymatic hydrolysis to an in vitro fermentation using faecal inoculums with six steamed vegetables.

Fibre content and in vitro digestibility of DM of some steamed vegetables

Fermentation Kinetics on some steamed vegetables

Conclusions

Fermentation kinetics depend of DF contents in vegetables being highest with SDF. There is a higher fermentability of vegetables DF in the presence of microbiota isolated from the feces of lean patients than their obese counterparts.