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## Feruloylated oligosaccharides from maize bran altered the microbiota in the gut of rats

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Feruloylated oligosaccharides (FOs) are derivatives of the esterification products of ferulic acid. The product of FOs (GRAS Notice 000343) approved by the Division of Biotechnology and GRAS Notice Review, United States Food and Drug Administration (FDA) in 2010. It possesses the physiological functions of antioxidant activity, probiotic effects and inhibition against glycation. The effects of feruloylated oligosaccharides (FOs) from maize bran on the microbial diversity and profiles in rat feces were investigated through 16S rRNA sequencing. The effects of FOs on chemical parameters in the plasma, liver, and heart were also evaluated. FOs significantly increased bacterial richness and diversity compared with the control and xylooligosaccharides (Xyl) alone. Compared with the control and Xyl, FOs orally administered at 300 mg/kg increased OUT (operational taxonomic units) by 57.0% and 24.8%, and CHAO value by 93.4% and 37.6%, respectively. FOs also influenced obesity- and diabetes-associated bacteria. FOs orally administered at 300 mg/kg decreased the ratio of Firmicutes to Bacteroidetes from 477.7 to 40.7; greatly increased the reads of bacteria that were previously found resistant against diabetes in rats, such as Porphyromonadaceae, Prevotellaceae, and Lachnospiraceae; and moderately increased diabetes-prone bacteria, such as Clostridiaceae and Ruminococcaceae. FOs administration at 300 mg/kg also significantly decreased serum triglyceride and low-density lipoprotein cholesterol but did not significantly influence glucose, total cholesterol, and high-density lipoprotein cholesterol in serum, and thiobarbituric acid-reactive substances and glutathione in the plasma and liver. FOs decreased nitric oxide (NO) content in the heart but increased it in the plasma and liver.

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## Organoleptic characterization of virgin olive oil by HS-GC-MS

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In this communication, we present the development of qualitative and quantitative, rapid and highly sensitive methodology for the analysis of volatile and semi-volatile organic components present in virgin olive oils for the organoleptic assessment thereof, as a complementary method to the official method (named “panel test” method). Today the subjective method “panel test” is the biggest concern in the sector of olive oil, hence the interest of this methodology. The analysis is performed on a technical HS-GC-MS, working with electron impact ionization and SIFI mode for ion detecting (FULLSCAN and SIM at the same time). Extraction of volatile and semi-volatile components from virgin olive oils, is conducted by the technique of static headspace from 2 g of sample, at 120°C for 15 min and with sample vial shaking in order to facilitate the analytes extraction. 1-Fluorobenzene is added to all samples as internal standard and used for the relative quantification of analytes (chemical markers). Chromatographic separation is carried out on a 5% phenylsilicone GC column (60 m length, 0.32 mm i.d. and 1 µm film thickness). Under these conditions, we selected 39 compounds as marked compounds. Different prediction models of the three virgin olive oils categories, Extra-Virgin-Lampante by discriminant analysis and partial least squares regression (PLS-DA) gave optimal prediction results (>85%). These models reduce to 18 marked compounds making the methodology even more easy. The method developed for the qualitative and quantitative characterization of volatile components, as well as the identification of chemicals with positive/negative attributes in samples of virgin olive oils with different organoleptic qualities. The development of the method is being carried out with more than 700 samples of virgin olive oils previously characterized by accredited tasting panels.

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