Title:    **Determination of metabolic variables in a prediabetic animal model.**

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Microbiota is defined as the collective microbial community inhabiting a specific environment. Most are localized in the gastrointestinal tract and typified by two dominant bacterial phyla, namely Bacteroidetes and Firmicutes. Short-chain fatty acids (SCFA) represent the largest group of metabolic nutrients obtained from the bacteria in the intestinal microbiota and are the end product of fermentation of resistant carbohydrates.  Bacteroidetes are known to produce acetate and propionate, butyrate is mainly generated by Firmicutes. Nitric oxide (NO) is a highly diffusible short-lived free radical gas, permeating biomembranes with a wide range of physiological functions. Nitrate ($NO_3^-$) and nitrite ($NO_2^-$) anions have long been identified as stable products of NO oxidation. The quantity of nitrite excreted by the host can explain changes in the bacteria population. In this work a study of different metabolic variables animals with prediabetes state has been done. In a previous step of the I+D study, a nutritional intervention with inulin, resistant starch and D-fagomine was done in rats fed a high-fat diet and compared with a standard group. First, nitrites and creatinine in urine have been determinated. Next, a GC-FID method has been used to analyze SCFA in feces. The results have shown that acetic acid is the most abundant SCFA. The concentration of acetic acid decreases in all the study groups fed high-fat diets, fact that can indicate that the population of Bacteroidetes has been reduced. D-fagomine intervention has shown a tendency to increase the urine nitrite levels. This result can indicate an increase in the population of beneficial bacteria, but it will be necessary a future specific bacterial study to confirm this result.

**Keywords**: Microbiota, short-chain fatty acid, nitrite, creatinine, prediabetes, inulin, resistant starch, D-fagomine, high-fat diet, GC-FID.