

Novel insight in the role of the gut microbiota in obesity: beyond composition, towards activity and functionality

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It has become evident in the last few years that the activity of the gut microbiota contributes to overweight and obesity, but the exact mechanisms are still unclear. Some researchers blame the gut microbiota for increasing bodyweight, due to the extraction of energy in the form of short-chain fatty acids (SCFA) which become available to the host. However, these SCFA also have an anti-inflammatory effect, induce satiety hormones, and affect systemic metabolism, potentially leading to a reduction in bodyweight.

This poster describes some recent results obtained using a validated *in vitro* model of the colon (TIM-2; Figure 1):

- i. in terms of energy extraction by microbiotas originating from obese and lean volunteers, using established prebiotics, but also novel substrates derived from waste-streams of fruit and vegetables.
- ii. an example of modification of a dietary fiber by the gut microbiota, which subsequently modulates its interaction with the host's immune system.
- iii. interventions using pro- and/or prebiotics in (pre)diabetic and healthy children. Using molecular tools we show that the microbiota composition of these groups is different. Some of the interventions in the diabetic children lead to a shift of the microbiota towards those of the healthy children.