



The Department of Food Science Professional Seminar Series

SHIME, the Cutting-Edge Technology to study Gastro-intestinal tract

Guest Speaker:

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Wednesday, April 12, 2017, 11:00 AM-12:00 PM
Food Science and Nutritional Sciences Building
Conference Room 120

Seminar Description

SHIME (Simulator of Human Intestinal Microbial Ecosystem) is a unique dynamic model of the gastrointestinal tract (GIT) to study physicochemical, enzymatic and microbial parameters in a controlled *in vitro* setting. The model can be used to study the metabolic fate of food, microbial and pharmaceuticals compounds over a period of several weeks. Intestinal bacteria are largely present in the intestinal lumen, yet a fraction of the microorganisms in the gastrointestinal tract can also selectively adhere to the mucus layer that covers the gut wall. Gut microbiota can be studied in the Lumen (L-SHIME), as well as in the mucosal compartment, integrated in the colon regions of the system (M-SHIME). A recent evolution of the SHIME is the TWIN SHIME, in which two SHIME systems are run in parallel, and where all the environmental parameters are completely identical. This allows to perform placebo-controlled *in vitro* studies or the direct comparison of the intestinal fate of two products under identical conditions without interference of external parameters. The complete gastrointestinal tract is simulated, from stomach to the descending colon. Easy sampling from all regions of GIT allows generating detailed mechanistic data on the intestinal fate of the studied compounds, such as factors affecting the bioavailability of (e.g. formulation or matrix effects), metabolic/fermentative processes which affect the structure or/and function of active compounds, and local activity profiles in GIT. The specific setup of the SHIME allows performing long-term experiments with various stable, *in vitro*-adapted microbial communities.