A dietary approach of reducing the calorie intake is one of the safest and effective ways to lose body weight among currently available strategies to prevent or cure obesity.

Our designed carbohydrate materials with a distal glucose release character deliver glucose directly targeting the distal small intestine where L-cells are highly localized.

L-cells play an important role to secrete GLP-1 and PYY in response to the nutrients and consequently to reduce food intake. A study is planned for this summer 2016 where we hypothesize that administration of designed material impacts the onset of diet-induced obesity through lowering food intake. Result from this study will provide information regarding slowly digestible carbohydrate ingredients and weight management. This study will test our concept that glucose release from dietary available carbohydrates in the distal small intestine acts as a bioactive signal modulator in addition to its traditional role as a main energy provider. We hope that our data will provide the basis for a novel dietary strategy to improve the public health.

**SHORT TERM FEEDING STUDY**

Starch-entrapped alginate microsphere are designed slowly digestible starch (SDS) with possibility to vary digestion rate through control of alginate porous matrix.

Short term feeding of microspheres with different digestion rates to rats showed slower SDS material resulted in higher amount of starch remaining in the stomach, thus retarding gastric empty rate.

Obese-induced male C57Bl/6 mice (8 mice/group) at the age of 5-week-old will be assigned to different designed carbohydrates diets (10% slow digestible starch diet, 20% slow digestible starch diet, and high fat diet with rapid digestible starch as a positive control) for 12-weeks. Body weight and food intake will be monitored during the period of the intervention. At the end of the study, blood, the small intestine, liver, and white adipose tissues will be collected from the mice in order to estimate biochemical indicators.

**REFERENCES**

Yan Hasek, L. and Hamaker (2014). Dietary approach to modulate postprandial glucose absorption, gastric emptying, and long-term food intake using starch-entrapped microspheres.