SUMMARY

Intentional weight loss activates physiological mechanisms including stimulation of signalling molecules that increase appetite. Because appetite plays an important role in the individual’s ability to control energy intake, the upregulation of these mechanisms makes further weight loss as well as maintenance of an achieved weight loss a real challenge. Interestingly, obesity surgery and anti-obesity pharmaceuticals seem to at least partly overcome these appetite controlling mechanisms. However, with the continuously increasing number of individuals needing help for body weight management, the big “therapeutic gap” between medical treatments and the traditional weight loss interventions calls for new dietary-based concepts for body weight management. Dietary-based concepts in which the body’s increased appetite can be satisfied with less energy consumption may be an option to help people manage body weight in order to maintain health and wellbeing throughout life. Nevertheless, there is presently no consensus around whether reduction in appetite is an effective tool for body weight management.

The overall aim of this PhD thesis was to investigate the role of reduction in appetite for body weight management in the context of overweight and obesity. The specific objectives were:

I. To review data from clinical trials to investigate if the current literature finds a relationship between appetite reducing interventions and improved body weight management, and thereby support ascribing appetite as a beneficial effect on body weight management in the context of overweight and obesity.

II. To examine if reduction in appetite is associated with improved body weight management after weight loss.

III. To examine if appetite is associated with the degree of weight loss during energy restriction as well as with subsequent weight regain.

IV. To examine if macronutrient manipulations affect the satiating capacity of cheeses.

V. To examine if a novel food-derived bioactive component is able to reduce appetite.

In Paper I, a systematic review and meta-analysis showed that participants exposed to satiety enhancing and/or hunger reducing interventions reduced their body weight by 3.6 (1.1; 6.2) kg (mean [95% confidence interval]) more compared to controls. However, the number of studies was limited and the majority of the studies only assessed changes in appetite and changes in body weight on group level. Therefore, it was important to further examine this relationship with individual data.
In Paper II and Paper III, results from the European Commission project Satiety Innovation (SATIN) showed that sustained (assessed after repeated exposures to intervention products compared to baseline) reduction in appetite explained approximately 12% of the variation in weight loss maintenance, regardless of assessing appetite as ad libitum energy intake or self-reported appetite evaluations. No relationship between acute (assessed after a single exposure to intervention products compared to baseline) changes in energy intake and weight loss maintenance was found, while acute reduction in self-reported appetite evaluations was found to explain 10% of the variation in weight loss maintenance at follow-up. Furthermore, higher hunger as assessed by the Three-factor eating questionnaire (TFEQ) at baseline and reduction in TFEQ disinhibition and hunger during a low energy formula diet explained approximately 23% of the variation in weight loss. Increased TFEQ disinhibition during weight loss as well as during weight loss maintenance explained approximately 10% of the variation in subsequent weight regain.

In Paper IV and Paper V, results from acute appetite tests showed the effects of two appetite reducing concepts. Macronutrient manipulations resulting in higher protein content of energy reduced cheese did not lead to later compensatory energy intake, indicating an increased satiating capacity. Also, a novel food-derived bioactive component (DC7-2 peptide) was found capable of reducing energy intake at an ad libitum meal.

It may seem obvious that interventions capable of reducing appetite would be beneficial for body weight management. Nevertheless, this hypothesis had not been challenged previously, and as the reason for eating is highly multifactorial, it cannot be taken for granted that reduction in appetite improves body weight management. Overall, the evidences from this PhD thesis support a link between reduction in appetite and improved body weight management and, thereby, suggest that reduction in appetite could be seen as an effective tool for body weight management in the context of overweight and obesity. Also, concepts able to reduce appetite were identified, and the findings encourage further development of such concepts for the use in treatment and prevention of overweight and obesity.