Preface

This thesis is based on results from animal studies and two human intervention studies with probiotics which are described in three papers. Paper I describes the effect of three probiotic strains on GLP-1 mRNA expression in an isolated porcine ileum, the effect of Lactobacillus paracasei subsp. paracasei L. casei W8 (W8) on GCG mRNA expression in a piglet study and an acute study (ProSat I) on appetite regulation in humans. Paper II describes a four weeks intervention study (ProSat II) on humans investigating the effect of W8 on appetite regulation, blood lipids and fatty acids, and a piglet study on W8’s effect on mRNA expression of the enzyme stearoyl-CoA desaturase-1 (SCD1) which is involved in lipid metabolism. Finally, paper III describes the effect of W8 on gut microbiota (GM) composition based on fecal samples from the four weeks human intervention study and associations between GM and blood lipids. I conducted the ProSat I study from April to June 2009 and the ProSat II study from September to December 2009 at the Department of Nutrition, Exercise, and Sports, Faculty of Science, University of Copenhagen.

Chr. Hansen A/S funded the experimental studies of my PhD-project and one year salary. Øresund Food and Department of Nutrition, Exercise and Sports financed one year salary each.

The three papers included in this thesis are:

   Anne Toksvig Bjerg, Mette Kristensen, Christian Ritz, Jens Juul Holst, Charlotte Rasmussen, Thomas Dyrmann Leser, Anja Wellejus, Arne Astrup

II. Four weeks supplementation with Lactobacillus paracasei subsp. paracasei L. casei W8® shows modest effect on triacylglycerol in young healthy adults. Beneficial Microbes (2014), in press.
   Anne Toksvig Bjerg, Mette Kristensen, Christian Ritz, Ken D. Stark, Jens Juul Holst, Thomas Dyrmann Leser, Anja Wellejus, Arne Astrup

III. The effect of Lactobacillus paracasei subsp. paracasei L. casei W8® on blood levels of triacylglycerol is independent of colonization. Beneficial Microbes (2014), in press.
   Anne Toksvig Bjerg*, Maria Bornakke Sørensen*, Lucasz Krych, Lars Hestbjerg Hansen, Arne Astrup, Mette Kristensen, Dennis Sandris Nielsen
   *shared first authorship
**Contribution to the papers**

**Paper I**

I was involved in the design of the study together with MK, JJH and AA. I was main responsible for conducting the human study, including screening and recruitment of participants and data collection. I contributed to data analysis and was main accountable for interpretation of data and writing the manuscript. CR, JJH and TDL conducted the animal studies.

**Paper II**

I designed the study together with MK, JJH and AA. I was main responsible for conducting the study, screening and recruitment of participants and data collection. I contributed to data analysis and was main accountable for interpretation of data and writing the manuscript. TDL conducted the animal study.

**Paper III**

I designed the study together with MBS, MK and DSN. I was main responsible for conducting the study (paper II) from which the fecal samples for the microbiota composition analysis were collected. MBS did the fecal microbiota analysis. I was responsible for interpretation of data and writing the manuscript together with MBS.