Abstract

Current scientific knowledge point to a key role of the gut microbiota (GM) in the pathogenesis of various obesity-related diseases. *Akkermansia muciniphila* (AM), a commensal intestinal bacterium present in the human digestive tract, has become the subject of many research projects. Studies using experimental animal models have shown that AM has significant functional capabilities, including reducing obesity, glucose intolerance, insulin resistance, hepatic steatosis and improved intestinal permeability. It can be assumed that similar effects will also be observed in humans, as already suggested by the first published studies. AM is currently identified as a next generation probiotic due to its ability to positively influence host health. The inclusion of GM modulation in the overall obesity treatment plan, particularly through AM, may significantly increase weight loss efficacy and improve metabolic parameters. This approach may include probiotic/postbiotic, dietary and pharmacological interventions, thereby promoting healthier GM composition and microbiome function in general. This bachelor thesis aims to provide a comprehensive review and analysis of research studies focused on AM in humans in order to gain a deeper understanding of its impact and functions. Based on the analysis of 10 randomized controlled trials (RCT) conducted, there is a correlation between AM, obesity and related diseases. Intervention with probiotics and postbiotics, especially with pasteurized form, has a beneficial effect on metabolic parameters. Diet interventions confirmed the relationship between AM and body composition, improving metabolic parameters, reduction of insulin resistance and effect on the endocannabinoid system. Pharmacological interventions have also shown a positive association between different substances and the presence of AM. This thesis concludes with the findings, that AM has the potential to promote better metabolic parameters during obesity and influence processes related to lipid metabolism and insulin sensitivity. AM represents an important element in obesity research and may play a key role in new therapeutic approaches. However, in order to confirm these findings, it is necessary to perform more rigorous clinical trials.

Keywords: *Akkermansia muciniphila*, obesity, gut microbiota, insulin resistence, probiotics