Abstract

Cardiovascular disease (CVD) is the leading cause of health loss and premature death globally and accounted for 17.9 million deaths and 422 million prevalent cases in 2015. Dietary consumption of polyunsaturated fatty acids (PUFA), including omega-3 fatty (n-3 PUFA) acid and omega-6 fatty acid (n-6 PUFA), has for decades been recommended instead of saturated fatty acids for cardiovascular protection in the management of CVD. However, studies investigating cardiovascular outcomes demonstrate conflicting results regarding the protective effect of PUFA. Hence, there is an ongoing discussion regarding the role of different dietary fat in CVD-prevention, and further studies are important to understand the physiological effects of different types of fatty acids on CVD risk factors.

The aim of this PhD thesis is to investigate possible differences between the supplementation of high quality n-3 PUFA and n-6 PUFA in individuals with increased cardiovascular risk. 38 inactive people with increased waistline (≥ 94 cm in men and ≥ 80 cm in women) were included in a randomized double-blind crossover study. In random order they received a daily supplementation of n-3 PUFA or n-6 PUFA for 8 weeks, separated by a wash-out period of 8 weeks. The thesis examines effects of PUFA on 1) circulating lipids and lipoprotein number and subclasses, 2) established and exploratory biomarkers for CVD by proteomics profiling and 3) adipose tissue by analyses of adipokines and global gene expression profiling.