Introduction

Nowadays, we seem to consume more and move less. Therefore, we face a situation where numerous overweight and obese (BMI 25-30 and BMI>30) (Hamer & Stamatakis, 2013) patients are diagnosed. Since the prevalence of obesity doubled since 1980, it has become classified as a worldwide epidemic (World Health Organization, 2013). This fact is not only reported for industrialized countries but it is observed around the globe (Flegal, et al., 2002). Besides, not only adults are affected but with every year younger children as well (Wang & Lobstein, 2006). The epidemic seems to be due to the changes in food composition and style of consumption and lack of physical activity, often termed ''the Western lifestyle'' (Poti, et al., 2014). Low quality of life (Bjorntorp, 1996) and reduced life expectancy (Asghar, et al., 2012) are associated with obesity, as well as depression (Baumeister & Harter, 2007), cardiovascular disease (Rimm, et al., 1995), osteoarthritis, asthma, and certain types of cancer (Larsson, et al., 2007) and above all type 2 diabetes (Goel, et al., 2014). Obesity can be treated with diet and physical activity but the treatment effect is short lasting. Since the still increasing number of people living with diabetes across the globe was recently estimated at 347 million (Danaei, et al., 2011), it has become an important issue to investigate ways to prevent and cure this disease. Therefore, it is critically important to know exactly what goes wrong physiologically and biochemically in this disease complex. This will enable us to find the best possible way to heal the illness. Hormones may be involved in the disease development, including glucagon-like peptide-1, glucagon and oxyntomodulin (Holst, 2006) and consequently accurate measurement of these hormones has become a key point. But since a number of commercially available assays have appeared during the last year's vendors do not provide clear and full information about their assay products, problems with measurement or with data interpretation often appear. Therefore, the main purpose of this thesis was to clarify the factors of importance for a reliable and specific measurement of these hormones and to assess the specificity, sensitivity, precision and accuracy of commercial kits. Understanding the complexity of those hormones assays, as well as sample handling, stability and measurement is the key to a further development in this area and to new drug discovery.