Abstract

Whey protein containing pre-meals for patients with metabolic syndrome and type 2 diabetes

Cardiovascular disease (CVD) is the dominating cause of death worldwide. Subjects with metabolic syndrome and type 2 diabetes (T2D) have an increased CVD risk. The elevated risk is attributed to clustering of comorbidities such as obesity, hypertension and dyslipidaemia. Dyslipidaemia is e.g. determined by exaggerated concentrations of triglyceride. Besides classical risk factors, high postprandial triglyceridaemia (PPL) has more recently been defined as an independent risk factor of CVD. A high PPL is linked to an increased risk CVD, because especially remnant lipoproteins act as atherogenic particles. Reduction of increased PPL is therefore important in groups with increased risk of CVD.

Humans spend the majority of the day in a non-fasting state. Thus, the postprandial phase and its acute effects on metabolic and hormonal responses are of major interest. One of the most important modifiable factors influencing the postprandial lipid metabolism is diet. The quality of diet e.g. dietary protein and fat affects the magnitude of PPL in both subjects with and without T2D. Whey proteins from milk positively influence the glucose metabolism. Acute, postprandial studies in healthy and T2D subjects show that co-ingestion of whey proteins with carbohydrates improve the postprandial glucose response by stimulating insulin secretion. Furthermore, based on the classical Staub-Traugott phenomenon, where glucose consumed prior to a meal improves the tolerance of carbohydrates in the following meal, it occurs that proteins profitably can be consumed as a pre-meal prior to a carbohydrate-rich meal. This insulinotropic effect of whey proteins is attributed to the high content of branched-chained amino acids in whey proteins. Interestingly, co-ingestion of whey proteins with a fat-rich meal causes an acute reduction of PPL in people with or without T2D compared to casein, cod and gluten protein. This may be beneficial in reducing the risk of CVD in high-risk subjects.