



INTRODUCTION

Diabetes mellitus is a group of metabolic disease characterized by chronic hyperglycemia resulting from defect in insulin secretion, insulin action or both. The abnormalities in carbohydrate, fat, and protein metabolism that are found in diabetes are due to deficient action of insulin on target tissues (*ISPAD consensus guideline, 2009*).

The major forms of diabetes mellitus are classified according to those causes by deficiency of insulin secretion due to pancreatic β - cells damage (type 1 DM) and those that are consequence of insulin resistance occurring at the level of skeletal muscles, liver and adipose tissue, with various degree of β - cells impairment (type 2 DM). Type 1 DM is the most common endocrine metabolic disorder of childhood and adolescence (*Alemzadeh and Wyatt, 2007*).

In diabetes, metabolism of carbohydrate and fat is abnormal and an association between the proper metabolic control and the development of complications is widely recognized also decreased plasma Carnitine



levels have already been reported in patients with type 2 diabetes and an underestimated role of Carnitine in the clinical course and complications has been suggested (*Mamoulakis et al., 2004*).

L-carnitine is a naturally occurring hydrophilic amino acid derivative produced endogenously in the kidneys and liver and derived from meat and dairy products in the diet. It plays an essential role in the transfer of long-chain fatty acids into mitochondria for beta oxidation (*Scaglia, 2010*).

L-carnitine is an essential for children for energy utilization, ketogenesis, thermal regulation and growth (*Scaglia and Longo, 1999*).

L-carnitine is essential for the lipid and carbohydrate metabolism and proper metabolic control in type 1 DM has potential impact on long-term complication. (*Mamoulakis et al., 2004*).