



Diabetes Mellitus: Life Style, Obesity and Insulin Resistance

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In millennia, 40 million people were died with non-communicable diseases and diabetes is one of them. In diabetes, insulin secretions are not produced properly or resist to body and if it is not treated, it might cause death of all the organs. Researchers now seek the other therapies apart from medicinal, to manage diabetes with minimal side-effects and more efficacy. They are experimenting on herbs and therapeutic food that play role in disease or delay the progression of disease. Drugs in these days are very costly and may also have side effects. Different herbs may have a beneficial role in diabetes due to the active components involved in insulin resistance such as 'myoinositol'.

Researchers are more interested in lifestyle in recent decades because it is importance for health [1]. People that follow an unhealthy lifestyle are in million. The dominant form of lifestyle that affects the unhealthy lifestyle is alcohol, drug abuse, malnutrition, stress, and unhealthy diet [2]. Unhealthy lifestyle may cause death, illness, disabilities, metabolic disease, cardiovascular diseases (CVD), skeletal diseases, diabetes, and hypertension [3]. The oldest disease known by man is probably diabetes which dates back to 3000 years ago, first reported in Egyptian [4,5]. Type 1 and type 2 diabetes differentiation was made in 1936 [6]. In 1988 type 2 was defined as metabolic syndrome [7]. Defects in insulin secretion or action cause hyperglycemia and this group may cause metabolic disease and form diabetes mellitus. Failure of organs and body dysfunction may be caused by prolonged chronic hyperglycemia. Diabetes may be developed by several pathogenic processes [8]. Insulin resistance may be due to insulin deficiency or abnormalities and the destruction of the cells of the pancreas by an autoimmune disorder. Deficient action of insulin on target tissues may affect the fat carbohydrate and protein metabolism [9].

Deficiency of insulin may cause hyperglycemia by affecting the complex hormonal pathways by unknown mechanisms [10]. Beta cells in the islets of Langerhans of the pancreas produces a hormone 'insulin' which regulates carbohydrate, fats and protein metabolism. Insulin is secreted from beta cells by glucagon but commonly by glucose. Hyperglycemia is caused when the balance of insulin and glucagon is disturbed [11]. In 5-10% subjects diagnosed with type 1 diabetes [12]. The β cells in the pancreas are destructed [13,14].

In most patients, β -cell destruction varies as it may be increasing in some patients while slow in others. In children and adolescent's ketoacidosis is the first stage of this disease. In other patients fasting hyperglycemia converts into a severe stage and in the presence of stress, the ketoacidosis is occurred [15,16]. Most of the patients depend on insulin for survival to prevent ketoacidosis because in these patients β -cell function is sufficient for the prevention of ketoacidosis [17].

In type 1 diabetes the pathogenesis is still unclear, there is no data on why the auto antibodies against work on islets cells hallmark [18,19]. Type 1 diabetes is most common in children or adolescents. Several environmental factors also cause diabetes apart from genetic predisposition [20,21], including Ljungan virus, viral infection, herpes virus, enterovirus, congenital rubella [22,23]. The autoimmune disease also occurs by different pollutants, low level of vitamin D, childhood infection, prenatal exposure to viruses [24]. These things may be controversial because in recent studies viral infection may cause the type 1 diabetes [25].

In type 2 diabetes, hyperglycemia causes the insulin deficiency and is also known as non-insulin diabetes mellitus. It may be due to genetic, behavioral or environmental risk factors [26-28]. In poor developing countries like Africa, type 2 diabetes increased the morbidity and mortality due to the commonness and late diagnosis of this type of disease [29]. Type 2 diabetes is also associated with genetics and lifestyle. Type 2 diabetes mostly occur genetically as compared to type 1 diabetes [30]. Approximately, there are 90% chances of diabetes occurrence, if in monozygotic twins, one is affected with diabetes. In type 2 diabetes, Maturity Onset Diabetes of the Young (MODY) is also identified in type 2 diabetes, it is not like autoantibodies in type 1 diabetes and it occurs in 25 years of age [31,32]. The genetics of this disease are still unclear as some patients have mutations but never develop the disease, and others will develop clinical symptoms of MODY but have no identifiable mutation [33].

Diabetes may be devastating in the next years due to the obesity because obesity is more prevalent globally and due to this insulin resistance may occur. A lot of medicines are prescribed for the hyperglycemia but it also has so many side effects. There are a lot of nutraceuticals that are helpful in diabetes management and most of the herbs have potential to lower the hyperglycemia and treat diabetes insulin resistance.

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