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Chapter

Medicinal Plants, Bioactive Compounds, and Dietary Therapies for Treating Type 1 and Type 2 Diabetes Mellitus

Chinaza Godwill Awuchi

Abstract

Medicinal plants, bioactive compounds, and dietary measures have been found to be effective in the treatment of type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM). About 463 million people have diabetes worldwide; estimates project 700 million people by 2045. While T1DM is caused by the loss of beta cells of pancreatic islets that produce insulin, resulting in the deficiency of insulin, T2DM, which constitutes over 90 to 95% of all DM cases, is caused by insulin resistance, and could relatively combine reduction in the secretion of insulin. Aloe vera, Terminalia chebula, Perilla frutescens, Curcuma longa, Zingiber zerumbet, Nigella sativa, Gongronema latifolium, Pachira aquatic, Caesalpinioideae, Azadirachta indica, Artemisia dracunculus, Artemisia herba-alba, Vachellia nilotica, Abelmoschus moschatus, Cinnamomum verum, Salvia officinalis, Tinospora cordifoli, Pterocarpus, Ocimum tenuiflorum, Mangifera indica, Syzygium cumini, Coccinia grandis, Caesalpinia bonduc, Gymnema sylvestre, Carthamus tinctorius, Allium sativum, and Trigonella foenum-graecum are among the medicinal plants shown to be effective in controlling and treating T1DM and T2DM. Bioactive compounds such as lycopene, vitamin E, vitamin D, genistein, quercetin, resveratrol, epigallocatechin-3-gallate, hesperidin, naringin, anthocyanin, etc. are useful in treating T1DM and T2DM.

Keywords: medicinal plants for treating diabetes type 1 and 2, bioactive compounds for treating diabetes type 1 and 2, dietary measures for managing diabetes, diabetes mellitus, herbal therapy for diabetes

1. Introduction

Diabetes mellitus (DM), simply called diabetes, are metabolic disorders characterized by varying or persistent hyperglycemia (high levels of sugar in the blood) over an extended time period. The most common symptoms of DM usually include increased appetite, increased thirst, and frequent urination. If not treated or when poorly managed, DM can result in several complications. While acute complications of DM often include hyperosmolar hyperglycemic state, diabetic ketoacidosis, or even death, severe chronic complications include cognitive impairment, damage to the eyes, damage to the nerves, foot ulcers, chronic kidney disease, stroke, and cardiovascular disease [1]. Diabetes mellitus (DM) manifest by hyperglycemia,


