SCENE SETTING AND OUTCOME

Diabetes mellitus has now assumed epidemic proportions in many countries of the world. With the present population of 19.4 million diabetics and thereby leading to approximately 60 million by the year 2025, India would rank first in sharing the global burden of diabetes. Genetic predisposition to central (visceral) adiposity, insulin resistance and diabetes are thought to be important determinants. Impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) have emerged as the most important targets for primary prevention with lifestyle modification and pharmacological agents like metformin and insulin sensitizers. Insulin resistance and hyperinsulinemia occupy the central stage of the metabolic syndrome. Armamentarium available today for the treatment of diabetes is replete with large number of potent and focused drugs. Insulin sensitizers (thiazolidinediones), new generation insulin secretagogue (glimepiride), acarbose and designer insulin (lispro and aspart) have enormously helped in achieving better metabolic control. However, their impact on long term outcome of diabetes related end point remains to be proven and moreover they are costly and beyond the reach of our people. Our country hold one of the biggest heritage in plant diversity, even in the ancient times, plant based drugs were promising for the treatment of major diseases. Because of the adverse side effect imposed by the available drugs, the dialectologists have started looking into plant based medicines. Investigation of the present study identified some terrestrial plants and marine flora and fauna possessing antidiabetic property in STZ-induced diabetic rats, synthetic compounds hitting the novel targets (α-glucosidase, aldose reductase and protein tyrosine phosphatase) for the synthesis of antidiabetic compounds both for glucose lowering as well as insulin resistance, preclinical development of one standardized marine extract CDR-134 and one standardized herbal extract CT-1, their effect on regulatory enzymes of carbohydrate metabolism and insulin resistance. Overall the investigation made in the present study provide an overview of multiple aspects of the pathophysiology of diabetes and insulin resistance; multi-model therapeutic effect of medicinal plants/phytochemicals as antihyperglycaemic and insulin resistant reversal agents.