Diabetes mellitus is a metabolic disorder characterized by hyperglycemia (high blood sugar) and other signs, as distinct from a single disease or condition. Diabetes mellitus results from the destruction of the insulin-producing beta cells of the pancreas, a disease development process that can last several years before the clinical onset of the disease. The liver is the main target organ for maintaining plasma glucose levels within narrow limits. Hyperglycaemia can generate a redox imbalance inside the cells, especially in the liver, in diabetic patients it is observed impairment of antioxidant enzymes, oxidative enzymes and irregularities in the metabolism of proteins, aminotransferases and elevations of lipid peroxidation levels and it also observed dysfunctions like retinopathy, peripheral neuropathy and central nervous disorder.

Alcohol is one of the oldest and most widely used psychoactive drug on earth and moderate consumption of alcohol is medically beneficial and socially acceptable. However excessive consumption of alcohol leads to complex problems to health, alcohol consumption promotes oxidative stress and leads to tissue injury, several pathways have been suggested to play a key role in ethanol-induced oxidative stress. Ethanol intoxication results in extensive generation of free radicals and decreased levels of antioxidants, both of which contribute to a probable mechanism initiating lipid peroxidation (LPO) in various tissues.

Chronic ethanol intake is known to cause direct and indirect toxic effect to mammals and humans by the effect of its byproducts such as acetaldehyde and acetate. Acetaldehyde, the primary metabolic product of alcohol in the liver appers to be a key generator of free radicals during metabolism of alcohol via microsomal enzymes oxidizing system (MEOS) pathway. Ethanol can increase liver oxidative damage in hepatocytes.
Heavy alcohol drinking negatively influences the self-care of diabetics, which requiring strict management of their lifestyle. Moderate intake of alcohol was reported to be beneficial in many disease conditions, including diabetes mellitus. Consumption of alcoholic beverages is the leading cause of hypoglycemic coma and death. It has also been established that alcohol interferes with glycemic control primarily by inhibiting gluconeogenesis and hepatic glucose production and therefore, alcohol ingestion among diabetic subjects receiving hypoglycemic therapies could potentially be a harmful combination. In fact it has been shown that alcohol consumption among diabetic subjects increases the relative risk of death in high consumption populations, as well as the incidence of diabetic retinopathy.

Nature has been a source of medicinal treatments for thousands of years, and plant-based systems continue to play an essential role in the primary health care of 80% of the World’s underdeveloped and developing countries. Many herbal medicines have been recommended for the treatment of ethanol treated diabetic rats. Herbal drugs are frequently considered to be less toxic and with less side effects than synthetic ones.

Ginger, the underground stem or rhizome of the plant Zingerber officinale: (Roscoe; Family: Zingiberaceae) continues to be used as an important cooking spice around the world. Furthermore, ginger has been used as a medicine in Asian, Indian, and Arabic herbal traditions since ancient times. In China, ginger has been used to aid digestion and treat stomach upset, diarrhoea, and nausea for more than 2000 years. In recent times there has been scientific research undertaken to test the validity of the medicinal claims made about ginger, and some exciting results with respect to the medicinal properties of ginger have been obtained. One of these properties is the effect of the juice of Z. officinale on Streptozotocin-induced diabetic rats.

There are many reports on the antioxidant property of ginger. Ginger is extensively used to treat headaches, nausea, asthma and other diseases. The dried rhizomes are used to cure variety of human ailments, like diarrhoea,
fever, cough, ulcers, boils and wounds. Hence, the present study is designed with a focus on characterization of antioxidant property from the plant and to define the antidiabetic role of the ethanolic extract of ginger with a particular reference to antioxidant, and hepato protective activity.

The present investigation has been carried out with reference to certain aspects of antioxidant enzymes and oxidative enzymes, blood glucose and body weight changes, aminotransferases, lipid peroxidation levels and histopathological changes. These parameters are preceded by a general introduction, material and methods and succeeded by summary and conclusion followed by bibliography.

Though the present investigation is preliminary in its nature, the results from the investigation are expressed in terms of compensatory responses of hepatic tissue during antidiabetic ginger treatment. The study also likely emphasizes the antioxidant effect of ginger by taking into consideration of measurement of specific parameters related to antioxidant enzymes, which play main role during oxidative stress.