SUMMARY

Diabetes is a worldwide serious health issue. A lot of medicines are available to control it, but many of them contain side effects. The current study was designed to evaluate medicinal efficacy of *Cinnamon tamala* and *Aloe vera* in diabetic induced mice. Alloxan monohydrate was injected intraperitoneally (200mg/kg) to induce diabetes. Blood glucose levels were measured to confirm hyperglycemia after 10-12 hours fasting. Albino mice with fasting blood glucose levels greater than 150mg/dl at the 7th day of induction were considered as diabetic. Eighty four mice were divided into 4 groups. Group I: negative control (non diabetic), Group II: positive control (diabetic), Group III: diabetic and *Cinnamomum tamala* treated and Group IV: diabetic and *Aloe barbadensis* treated. Serological parameters were performed and studied including liver function tests (LFTs), renal function tests (RFTs) and lipid profile. There was no increase in the blood sugar level from 89.67±3.48 mg/dl from day 0 to post 21 days in group I whereas in group II, the increase in blood sugar level occurred from 91.00±2.65 mg/dl day 0 to 250.00±3.79 mg/dl post 21 days. *Cinnamomum tamala* with (50mg/kg) and *Aloe barbadensis* with (400mg/kg) dose appeared as highly effective in reducing blood sugar and cholesterol levels after 21 days treatment. Medium dose (300mg/kg) and high dose (400 mg/kg) of *Aloe barbadensis* appeared as equally effective in reducing fasting blood glucose level (56.67±2.19 and 41.00±1.00 mg/dl). There was increase in the feed intake in diabetes induced group II as compared to normal group I post 21 days exposure whereas group II showed decrease in body weight during the same period of time. However, mice treated with *Aloe barbadensis* (400mg/kg) was found effective regarding increase in feed intake compared with normal group. Significant increase in weight of mice occurred treated with medium dose of *Cinnamomum tamala* (50mg/kg) as compared to diabetic and high dose (100 mg/kg) treated mice post 21 days. Significant increase in weight of mice treated occurred with high dose (400mg/kg) of *Aloe* barbadensis as compared to diabetic mice post 21 days. Medium dose of *Cinnamomum tamala* (50mg/kg) and high dose of *Aloe barbadensis* (400mg/kg) was also found effective in the reduction of serum creatinine and serum urea level in the diabetic treated groups.

Histology revealed pancreatic section from diabetic induced group II showed distorted islet of Langerhans with decreased cellular density, increased inter cellular spaces as well

as wide separation between islets of Langerhans and the surrounding pancreatic acini with the presence of many apoptotic cells. While group IV and V treated with *Cinnamon tamala* and *Aloe vera* showed islet with surrounding acini. Liver cells of diabetic group were vacuolated with focal necrosis of hepatocyte and inflammation of cells. The cells were with darkly stained nuclei, with prominent nucleoli and loss of polarity. Group IV and V showed normal arrangement of the hepatocyte. It was composed of lobules and hepatocyte which were arranged in the form of hepatic cords, extended radiantly from the central veins as in the normal liver cells. Section from Kidney with alloxan induced diabetic mice showed marked degeneration of the glomeruli with glomerular atrophies and severe vacuolations. Medium dose of *Cinnamomum tamala* group IV and high dose of *Aloe vera* group V showed pathological improvement with normal appearance of the glomeruli and kidney of mice showed normal appearance of the glomeruli.

In conclusion Alloxan monohydrate induced diabetes in mice, the single intraperitoneal dose (200mg/kg B.W) leads to diabetes and initiate acute phase response which sets in diabetes thus causing change in blood chemistry. *Cinnamon* and *Aloe vera* are potentially efficient to treat hyperglycemia and hyperlipidemia at recommended oral doses of 50 mg/kg and 400mg/kg of body weight respectively.