

Summary and conclusion

5.0 SUMMARY AND CONCLUSION

A large number of medicinal plants and their purified constituents have shown beneficial therapeutic potentials. Natural products like herbs, fruits and vegetables become popular in recent years due to public awareness and increasing interest among consumers and scientific community. The traditional use of plants can lead to the discovery of new potent pharmacological agents in the treatment of several diseases. *Aristolochia bracteolata* is having antioxidant property and can neutralize free radicals, thus it plays an important role in the prevention of many diseases. Management of diabetes mellitus without any side effect is still a challenge to the medicinal community. There is continuous search for alternative drugs. Hence the plant might act as potent oral hypoglycemic agent to treat diabetes.

The present study, “**Antidiabetic and Antioxidant effect of *Aristolochia bracteolata* in Streptozotocin induced Diabetic rats**”, has been formulated with an objective to establish the antidiabetic effect, antioxidant potential and free radical scavenging properties of *Aristolochia bracteolata*. The plants were collected, washed, air dried in room temperature, powdered and extracted with methanol. The plant extract was administered orally for 30 days in Streptozotocin induced diabetic animals. The methanolic extract of *Aristolochia bracteolata* was tested for its hypoglycemic effect by determining the blood glucose level in Streptozotocin induced Diabetic animals. The antioxidant potential of the plant sample was established by estimating the levels of enzymic antioxidants such as catalase, peroxidase , superoxide dismutase, glutathione-S- tranferase , glutathione-S-transeferase) and non enzymic (ascorbic acid, α -tocopherol, reduced glutathione) antioxidants in Streptozotocin induced diabetic animals as well as in the plant extract . The percentage inhibition of invitro lipid peroxidation, nitric oxide generation, superoxide generation, DPPH and ABTS radical activity was determined in the plant extract to screen the radical scavenging effect. Histopathological studies were carried to find the liver damage in Streptozocin induced diabetic and normal animals .

The findings revealed that the plant extract has reduced the blood glucose level in plant the experimental animals administered with the plant extract at concentration (250mg/kg) (GV) and the concentration (500mg/kg) (GVI) when compared to untreated diabetic control animals

(GII). The plant extract at a concentration (500mg/kg) dose to diabetic rats has marked effect in reversing the blood glucose level to near normal values than at lower concentration (250mg/kg) indicating the greater glucose lowering effect of the extract at the highest concentration.

Analysis of the antioxidant levels in the plant extract showed that *Aristolochia bracteolata* was found to exhibit maximum activity of catalase, peroxidase and superoxide dismutase at higher concentration (100µg/ml) when compared with lower concentration (20µg/ml). Also in experimental animals, the groups which received the greater concentration of the extract (500mg/kg) recorded maximum value for all the enzymic antioxidants except SOD.

In non enzymatic antioxidants, the methanolic extract of *Aristolochia bracteolata* showed the maximum level at the highest concentration (100µg/ml) when compared with lower concentration (20µg/ml). The content of Ascorbic acid, α-Tocopherol and reduced glutathione was found to increase when the concentration of the plant extract increases. Administration of methanolic extract of *A. bracteolata* orally for 30 days has significantly increased the non-enzymic antioxidant levels in the experimental groups (GV and GVI). The level of α-Tocopherol and reduced glutathione in DMSO treated group (GIII) and the group supplemented with only plant extract (GIV) was found to be lower compared with normal control (GI) animals. Of the two different plant extract treated experimental groups (GVI) has maximum content of non-enzymic antioxidants.

The methanolic extract of *Aristolochia bracteolata* used for lipid peroxidation, nitric oxide and superoxide generation exerted greater percentage inhibition at the highest concentration (100µg/ml) when compared with the lowest concentration (20µg/ml). There was maximum percentage inhibition of DPPH (75.92%) and ABTS (62.88%) radical formation at the highest concentration (100µg/ml) and the minimum inhibition was found in the lowest concentration (20µg/ml) of the plant extract. The plant has greater scavenging effect for DPPH radicals compared to ABTS radical.

The findings revealed that the plant exhibits promising antidiabetic activity and helps to maintain good glycemc and metabolic control . The methanolic extract of the plant sample

chosen for the study could also serve as effective source of enzymic and nonenzymic antioxidants. To counteract the negative effect of oxidative stress, antioxidant-based therapy is promising to minimize the complications associated with oxidative stress in diabetes mellitus. Hence, the plant can be used as effective drug target against the diabetes and potential candidate to eliminate the oxidative stress induced in diabetes.

Recommendations for future study

- ❖ The active principles present in the *Aristolochia bracteolata* can be isolated using HPLC, TLC and various other chromatographic techniques.
- ❖ The active components isolated can be tested with the experimental animals.
- ❖ The insecticidal and antiinflammatory effect of the plant can be studied.