Antidiabetic Activity
13. Anti-Diabetic study

- Animal experiment was performed as per the protocol approved by the Institutional Animal Ethics Committee (Approval letter in Appendix 1).

- The study included 11 groups containing six healthy adult Wistar albino rats (150-200 gms) in polypropylene cages layered with husk and maintained in a controlled room temperature at (22±3°C) and light (12 hours light/dark cycle).

- Animals were provided free access to water and standard pellet diet. Animals were cared in accordance with the “Guide for the care and use of laboratory animals” (NIH 1985) and study was conducted in accordance with the committee for the purpose of control and supervision on experiments on animals (CPCSEA).

- The animals were randomly selected, marked to permit individual identification and kept in their cages for at least 5 days prior to dosing for acclimatization to the laboratory conditions.

- The diabetes was induced to the animal using Streptozotocin. Streptozotocin was dissolved in 0.1M sodium citrate buffer (pH - 4.5) and injected intraperitoneally at the dose of 40-50 mg/kg body weight. However, the animals were allowed to drink 5% glucose solution overnight to avoid hypoglycaemic shock.

- After 48hrs of Streptozotocin injection, the animals having fasting blood glucose level more than 300 mg/dl were considered as diabetic rats and used for the study.

- All the experimental rats were fasted overnight and the blood was withdrawn through puncturing retro orbital sinus on 0 day.

- Animals in Group 1 (Normal control) received distilled water given orally for 14 days.

- Animals in Group 2 (Diabetic control) received distilled water given orally for 14 days.

- Animals in Group 3 (Standard), received standard drug Glibenclamide orally at the dose of 5mg/kg body weight once daily for 14 days.

- Animals in Group 4 received pure Quercetin orally at the dose of 50 mg/kg of body weight once daily for 14 days.
Animals in Group 5 received pure Rutin orally at the dose of 50 mg/kg of body weight once daily for 14 days.

Animals in Group 6 received pure Silibinin orally at the dose of 50 mg/kg of body weight once daily for 14 days.

Animals in Group 7 received Quercetin loaded polymeric nanoformulation orally at the dose equivalent to 50 mg/kg of body weight once daily for 14 days.

Animals in Group 8 received Rutin loaded polymeric nanoformulation orally at the dose equivalent to 50 mg/kg of body weight once daily for 14 days.

Animals in Group 9 received Silibinin loaded polymeric nanoformulation orally at the dose equivalent to 50 mg/kg of body weight once daily for 14 days.

Animals in Group 10 received Quercetin-Rutin loaded polymeric nanoformulation orally at the dose equivalent to 50 mg/kg of body weight once daily for 14 days.

Animals in Group 11 received Quercetin-Silibinin loaded polymeric nanoformulation orally at the dose equivalent to 50 mg/kg of body weight once daily for 14 days.

All the experimental rats were fasted overnight and the blood was withdrawn through puncturing retro orbital sinus on 7th day and 14th day of post induction period to determine blood glucose level by GOD-POD kit method.  

The change in body weight was observed throughout the treatment period in experimental animals.