Phytochemical studies:
The phytochemical investigation of cashew extracts revealed the presence of tannins and phenolics, flavonoids, alkaloids, and sugars. Microscopic studies and powdered drug characteristics were studied to identify diagnostic characters of the plant parts. Five extracts of cashew leaves and testa were prepared by conventional methods. A novel microwave assisted extraction (MAE) process has been applied in order to enhance the extractive yield of phytoconstituents. The optimized MAE process was found to increase yield of catechin rich extract by three fold and the time of extraction was reduced from 18 hours to 120 seconds.
Polyphenols such as catechin were found to be one of the major constituents of cashew leaves and testa, thus isolation of catechin was undertaken. Catechin was isolated by preparative thin layer chromatography from ethnaolic extract of testa which gave maximum yield of catechin.
HPLC and HPTLC methods were developed and quantitation of all the extracts for catechin content was carried out. Effect of various drying conditions of leaves on content of catechin was studied. Sun dried leaves were found to contain maximum amount of catechin.

Screening of extracts to identify bioactive extract/s and/or fractions:
The antioxidant efficacy of the extracts prepared by conventional and microwave assisted extraction process was evaluated by three different in-vitro assays - DPPH Radical scavenging assay, Greiss assay, and the lipid peroxidation (TBARS) assay and total phenolic content was determined.
All the extracts showed antioxidant activity however, three extracts, ethanol extract of testa, ethanol extract of leaves and polyphenol fraction of testa were selected for evaluation of anidiabetic activity since their IC$_{50}$ values were comparable with standard.
All the extracts and fractions were also tested on cell lines for ex vivo antioxidant activity by ROS assay and cellular viability. Four extracts were tested for angiogenesis. The ability of catechin to increase/suppress NrF2 production (an antioxidant response enzyme) was evaluated.
Acute toxicity and Evaluation of Antidiabetic activity of bioactive extract/s and fraction/s:

Based on the antioxidant study, three bioactive extracts/fractions (ethanol extract of leaves, ethanol extract of testa and polyphenol fraction of testa) have been selected for evaluation of anti diabetic study.

Acute toxicity studies of three bioactive extracts (ethanolic extract of testa, ethanolic extract of leaves and polyphenol fraction of testa) was carried out and all the three extracts/fractions were found to be safe upto 2000 mg/kg dose level and are categorized under category 5 of GSH as per OECD guidelines 423.

Diabetic model 1:
The bioactive extracts/fractions mentioned above were evaluated for antihyperglycemic activity by STZ induced Nicotinamide model (Diabetic model 1). Ethanol extract of leaves, Ethanol extract of testa and polyphenolic fraction of testa showed statistically significant antidiabetic activity at dose of 100 mg/kg, 175 mg/kg, and 50 mg/kg body weight respectively. Hence, two extracts i.e Ethanol extract of leaves and Ethanol extract of testa were further tested in the Diabetic model -2.

Diabetic model 2: Based on the above study, two extracts (ethanolic extract of leaves and ethanol extract of testa) exhibited statistically significant antidiabetic activity in neonatal (n2) Streptozotocin model indicating good potential agents for treatment of type II diabetes.

Ethanol extract of testa (175 mg/kg) and ethanol extract of leaves (100 mg/kg) showed excellent hypoglycemic activity in reducing fasting blood glucose levels. Statistical significant decrease in serum insulin and glycated haemoglobin levels were also observed in animals treated with ethanol extract of cashew leaves and testa. Ethanol extract of leaves and ethanol extract of testa showed significant antihyperlipidemic activity since the lipid profile Viz, LDL-c and VLDL-c levels were reduced statistically at p<0.05.

Formulation of oral dosage form (Tablet):
Admixing of the ethanol extract of cashew testa with dibasic calcium phosphate (DCP), as an inert carrier material, and subsequent addition of other additives to the mixture has provided a non-adherent and free-flowing powder.

The required amount of DCP has been optimized as 10%, based on the moisture
content determination of the dry extract preparations containing 2, 4, 6, 8 and 10% w/w DCP.

A tablet formulation containing the dry extract (187.0 mg), DCP (35.0 mg) and MCC (85.0 mg), and Talc (7.0 mg) provided the best tablet properties such as disintegration time of 2.3 min at a tablet hardness of 3.7 kg/cm$^2$. Thus, tablets with pharmacopoeial requirements could be prepared.

A detailed study of the formulated products from cashew extracts may help gain insights into the application of such formulations for clinical use.