RESULTS

*Invitro* studies with the extracts and various formulated dosage forms of the five plants were initiated by evaluating the anthelmintic activity against earthworms, roundworms and tapeworms in different concentrations like 25, 50, 100 mg/ml.

*Invivo* studies with the extracts and various formulated dosage forms were observed by the mean faecal egg counts in sheep and goats before and after the treatment. The efficacy of the treatment was measured by the faecal egg count reduction method. The mean reduction in faecal egg counts after the treatment with Albendazole in sheep ranged from 85-89% and in goat ranged from 95-97% respectively.

The alcoholic extracts of *Dalbergia sissoo, Clitoria ternatea, Cassia fistula* as well as Formulation I, II & V were found to be more potent than the other extracts in both invivo and invitro studies and their activities were comparable to the standard drug Albendazole.
RESULT AND DISCUSSION

Five popular indigenous medicinal plants namely *Dalbergia sissoo, Cassia fistula, Cissus quadrangularis, Clitorea ternatea, Amorphophylus campanulatus* were selected for the present investigation to assess anthelmintic efficacy as per the literature survey. The shade dried powders of *Dalbergia sissoo, Cassia fistula, Cissus quadrangularis, Clitorea ternatea, Amorphophylus campanulatus* were processed to obtain ethanolic and hot aqueous extracts using soxhlet extraction method.

The extracts obtained were subjected for phytochemical analysis to find out the active constituents and the presence of alkaloids, saponins, steroids, triterpenoids and tannins. The preliminary phytochemical investigation of ethanolic extracts shown significant effect on active constituents such as total ash value, insoluble ash, water soluble ash, sulphated ash, alcohol soluble extract, water soluble extract, foaming index and fluorescence analysis. The above studies were part of phytochemical evaluation to identify certain important aspects of the plants.

The extracts of the plants were subjected to TLC that further confirmed the presence of active constituents and isolated by HPTLC and identified by UV and IR spectroscopy. Individual compounds were isolated from the ethanolic extracts which have \( \lambda_{\text{max}} \pm 2.21 \).

IR spectra for the isolated compounds from ethanolic extracts of five plants were taken by potassium bromide method which confirm the presence of functional group bands. NMR spectral reports explored the molecule at the level of individual atom and afforded information concerning the environment of atom and offered an on molecular structure and molecular interaction which identified the active compound present. Mass spectra for the isolated
compounds shown largest fragment ion mass inferred the possible mass of the fragment.

The polyherbal formulations contains combination of five plants in the form of various ratios of plant extracts and powdered crude drugs in the dosage form of capsules. The final processed herbal material of particular mesh size is used for the polyherbal formulations. In order to ensure the quality of finished product **WHO guideline for the quality control of herbal materials** followed strictly. As per the guidelines specific tests such as sampling, macroscopic and microscopic analysis, TLC analysis, microbial load and absence of pathogens, ash content, extractable matter, foaming index, loss on drying, tannin content, foreign matter and specific powder characteristic tests such as angle of repose and bulk density were undertaken and significant results recorded.

The acute oral toxicity study was carried out to find out the toxicity of formulation as per the OECD guidelines (revised draft guideline 423) and no signs of acute toxicity (LD50 >2000mg/kg) was observed which encouraged for the further pharmacological evaluations.

The *invitro* anthelmintic activity of plant extracts and polyherbal formulation were determined by using the method Mathew *et al*. The anthelmintic activity was evaluated on adult Indian earth worm, round worm and tape worm obtained from Indian pig *due* to their anatomical and physiological similarity with the intestinal roundworm parasites of human beings. The time taken to paralyze and death of individual worm was observed. Paralysis was noted when the worms did not revive even in the normal saline solution. Death was concluded when the worms lost their motility followed by fading away of their body color.
The PC50 and LC50 values of ethanolic extracts of five plants and polyherbal formulation were 25, 50, 100 mg/ml, respectively, indicating the anthelmintic potency of the five extracts and polyherbal formulations in the order of *Dalbergia sissoo, Clitorea ternatea, Cassia fistula* as well as Formulation I, II and V. This observation indicated higher anthelmintic efficacy of the polyherbal formulations than the individual plant extracts which encouraged for further *invivo* studies.

The *invivo* anthelmintic studies were undertaken at Tamilnadu Veterinary and Animal Sciences University Research Centre situated at Namakkal and Dharmapuri. Naturally infected sheep and goat were selected, isolated and grouped for the study using individual plant extracts and polyherbal formulations. It was observed by the mean faecal egg count in sheep and goat before and after the treatment. The efficacy of the treatment was measured by the faecal egg count reduction method in comparison with standard marketed drug. The mean reduction in faecal egg count after the treatment in sheep ranged from 85-89 % and in goat ranged from 95-97% respectively.

The ethanolic extracts of *Dalbergia sissoo, Clitorea ternatea, Cassia fistula* as well as Formulation I, II and V were found to be more potent than the other extracts in both *invivo* and *invitro* studies and their activities were comparable to the standard drug Albendazole.

The alcoholic and aqueous extracts of five plants were subjected to antibacterial studies with the various authenticated strains. All the extracts and polyherbal formulations I & II showed significant antibacterial activity.

All the extracts and polyherbal formulations showed antifungal activity against the specific fungal strains. The zone of inhibition of the cefixime,
extracts and polyherbal formulations I & II shown significant antifungal activity against mucor, aspergillum, Candida albicans, rhizopus and pencillium.