In the present study is focused on the following aspects of two important endemic ethnomedicinal plants namely *Asystasia travancorica* Bedd. (Acanthaceae) and *Sonerila tinnevelliensis* Fischer (Melastomataceae).

- Pharmaco-chemical characterization of both the experimental plants.
- HPTLC profiles and GC-MS analysis of the whole plant ethanol extracts of *A. travancorica* Bedd. and *S. tinnevelliensis* Fischer.
- Pharmacological importance of the whole plant ethanolic extracts of *A. travancorica* and *S. tinnevelliensis* to assess their antioxidant, anticancer, antidiabetic, hepatoprotective, antifertility, antiinflammatory and immunomodulatory activities using animal models.

The ash analysis carried out revealed that the total ash content of *A. travancorica* whole plant was 8.44% and the total ash content of *S. tinnevelliensis* was 9.32%. The powdered drug of *A. travancorica* emitted characteristic fluorescent green colour when treated with 1N alcoholic NaOH, 50% sulphuric acid, 50% nitric acid concentrate nitric acid, 40% sodium hydroxide + 10% lead acetate, acetic acid and petroleum ether. Whereas, the powdered drug of *S. tinnevelliensis* emitted the characteristic fluorescent green colour when treated with 1N alcoholic NaOH, 50% nitric acid, concentrate nitric acid and ammonia.

The presence of alkaloids, anthraquinones, catechins, coumarins, flavonoids, phenols, quinones, saponins, steroids, tannins, terpenoids, sugars, glycosides and xanthoprotein have been confirmed, in the methanol and ethanol extracts of both the selected plants, by preliminary phytochemical analysis. The HPTLC profiles also confirmed the presence of alkaloids, flavonoids, glycosides, saponins and steroids.
The GC-MS analysis of the whole plant ethanol extract of *A. travancorica* helped to detect ten phytocompounds and some of the major compounds were Levo-à-Elemene, Tetra hydrospirilloxanthin, Stigmasterol, Phytol, 2,6,10 – Dodecartrien-1-ol, 3,7,11-trimethyl- [trans-farnesol], Ethyl iso-allocholate and Heptadecane 9-hexyl. Eight compounds were detected in the whole plant ethanol extract of *S. tinnevelliensis* and some of the major compounds were Tetra hydrospirilloxanthin, Ethyl iso-allochoate, Linolelaaidic acid, methyl ester, Diisooctyl phthalate, Stigmasterol and Heptadecane, 9-hexyl. The total phenolic content and total flavonoid content of the whole plant methanol extract of *A. travancorica* were found to be 0.54g 100g⁻¹ and 0.52g 100g⁻¹ and that of *S. tinnevelliensis* were found to be 0.32g 100g⁻¹ and 0.51g 100g⁻¹ respectively.

The antioxidant activity studies carried out using different techniques confirmed that both the plants possessed antioxidant properties. The pharmacological investigations, using animal models, carried out revealed that both the plants could be used as potent anticancer, antidiabetic, hepatoprotective, antifertility, antiinflammatory and immunomodulatory agents. The anticancer activity studies under taken showed that *A. travancorica* and *S. tinnevelliensis* significantly decreased the tumour volume and viable cell count. The mean survival time of the DAL tumour bearing mice was increased with the administration of whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis*.

Treatment with the whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis* decreased the fasting blood glucose level significantly. This sharp fall in fasting blood glucose level was a clear evidence of significant antidiabetic effect of these plants. The results also confirmed that both the selected plants could be used as potent hepatoprotective agents. The whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis* helped to reduce the elevated levels of total bilirubin, conjugated
and unconjugated bilirubin in liver damaged rats. Antifertility studies carried out also showed that both the plants could be used as potent antifertility agents. Treatment of male rats with the whole plant ethanol extracts of the experimental plants significantly decreased the sperm motility and sperm density in caudal epididymis. Treatment of male rats with the whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis* caused a drastic sperm abnormality. Intragastric administration with the whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis* to male rats caused a significant reduction in the number of females impregnated by treated male rats.

Both the plant extracts inhibited the paw oedema in rats induced by carrageenan significantly. The percentage of inhibition of paw oedema was dose dependent. The inhibition percentage of paw oedema by the extracts of the selected plants was statistically significant and well comparable to that of indomethacin, the standard antiinflammatory drug.

Immunomodulatory activities of the whole plant ethanol extracts of *A. travancorica* and *S. tinnevelliensis* were evaluated in Swiss albino female mice. Immunomodulatory activities pertaining to body weight, relative weight of organs, delayed type hypersensitivity (DTH) and haemagglutination titre (HT) were studied. Both the experimental plants were more effective in increasing body weight and also in increasing weight of organs such as spleen, liver and kidney. The findings confirmed that both the plants had very good immunomodulatory properties.

The anticancer, antidiabetic, hepatoprotective, antifertility, antiinflammatory and immunomodulatory activities of *A. travancorica* and *S. tinnevelliensis* need further detailed studies in the path if isolation and characterization of active principles responsible for the above potentialities of these herbals.