Summary
SUMMARY

The present study is mainly focused on the following three important aspects, survey, documentation and enumeration of the medicinal plants used by Kani tribes inhabiting the Nedumangadu Taluk, South-Eastern slopes of the Western Ghats, Kerala.

i) As an outcome of the present investigation 155 plants of medicinal use have been identified and documented. The documented plants belong to 136 genera and 62 families of the plant kingdom. Among the investigated medicinal plants 56 plants belong to the polypetalae under 27 families, 57 belong to the gamopetalae under 17 families, 16 belong to the monochlamydeae under 9 families and 24 belong to the monocotyledons under 9 families.

ii) The enumerated 155 plants used to cure as many as 82 different types of human maladies. Twenty six plants belonging to 26 genera and 21 families are used by the Kanis for treating gastro-intestinal complaints like stomachache, indigestion, dysentery, jaundice and obesity. 21 genera and 19 families are employed as analgesics to relieve rheumatic pain, headache, body pain, chest pain and migraine. They use twenty four plants belonging to 24 genera and 17 families to treat fever, cold and cough. Ten plants belonging to 9 genera and 8 families are used by the Kanis for treating various skin ailments like eczema, cut wounds, ring worm infection, pimples and itching.
iii) Fourteen medicinal plant species investigated from the study area are endemic and endangered/threatened. *Aristolochia krisagathra*, Sivarajan & Pradeep., *Pterocarpus santalinus*, L, *Rauwolfia serpentina*, Benth.ex.Kurz. and *Trichopus zeylanicus*, Gaertn are the four species found in the study area that need special care for conservation since they come under endangered/threatened plant list of IUCN.

iv) Thirty plant species were used in the preparation of antipoisoning medicines.

v) Among the 155 plant species used by the Kanis tribals as medicine for the treatment of various ailments, two important plants such as *Aristolochia krisagatra*, Sivarajan & Pradeep and *Geodorum densiflorum*, Schlechter were selected for intensive pharmacognostic studies. Microscopic features of the two selected plants were found to be specific and unique for each species.

vi) Among the two species studied, *Aristolochia krisagatra*, Sivarajan & Pradeep and *Geodorum densiflorum*, Schlechter exhibit narrow, distinct growth rings, each ring possessing a whorl of wide vessels. Lobed xylem cylinder type secondary thickening in *Aristolochia krisagatra*, Sivarajan & Pradeep and the stem consists of continuous epidermal layer parenchymatous outer cortex, sclerenchyma cylinder of inner cortex. Raphide idioblasts are a specific feature of *Geodorum densiflorum*, Schlechter and midrib consists of a thin epidermal layer of spindle shaped epidermal cells.
vii) Various phytochemical tests have been conducted qualitatively to find out the presence or absence of bioactive compounds; different chemical compounds such as alkaloids, terpenoids, coumarin, tannin, saponin, flavonoids quinones anthraquinones, phenols and glycosides were detected in *Aristolochia krisagatra*, Sivarajan & Pradeep and *Geodorum densiflorum*, Schlechter whole plant extracts which could made the plant useful for treating different ailments as having a potential of providing useful drugs of human use.

viii) Antimicrobial activity by using E.coli, Staphylococcus, Pseudomonas and Klebseilla were also done in the present investigation. The extracts of *Aristolochia krisagatra*, Sivarajan & Pradeep and *Geodorum densiflorum*, Schlechter recorded to possess higher antimicrobial activity. This investigation can be used as a source of antibacterial substances for possible treatment of many diseases including bacterial and fungal infections.

ix) Dehydroxyl radical scavenging activity of aqueous and ethanolic extracts of *Aristolochia krisagatra*, Sivarajan & Pradeep and *Geodorum densiflorum*, Schlechter were studied and the samples showed remarkable variations. Among the four samples selected, *Geodorum densiflorum*, Schlechter showed high percentage of inhibition. *Aristolochia krisagatra*, Sivarajan & Pradeep inhibition percentage was more (46.25% to 64.16%) in aqueous solution compared to the ethanolic solution.
x) Nitric oxide scavenging activity among the samples of *Aristolochia krisagatra*, Sivarajan & Pradeep aqueous showed high percentage of inhibition (69.73% to 85.52%) than other samples. In the case *Geodorum densiflorum*, Schlechter the percentage of inhibition varied from 46.05% to 76.31% for both aqueous and ethanolic solutions.

xi) Reducing power activity of *Aristolochia krisagatra*, Sivarajan & Pradeep prepared with the help of ethanolic medium expressed more activity than its counter parts. For the both the samples of *Geodorum densiflorum*, Schlechter the activity was less compared with that of the samples of *Aristolochia krisagatra*, Sivarajan & Pradeep.

xii) *Aristolochia krisagatra*, Sivarajan & Pradeep extract in ethanolic medium showed high range of super oxide free radical scavenging activity.

xiii) MTT assay of *Aristolochia krisagatra*, Sivarajan & Pradeep on HCT-15 colon carcinoma cell lines showed anti proliferative activity in both aqueous and ethanolic extracts.

xiv) The MTT assay of *Geodorum densiflorum*, Schlechter also shows antiproliferative activity of HCT-15 colon carcinoma cell lines with increasing concentration of aqueous and ethanolic extracts.
Conclusion
CONCLUSION

The present study is mainly focused on the medicinal aspects of various plants used by Kanis of Nedumangadu Taluk and along with the botanical name, habit, morphology of useful parts. In the present investigation 155 medicinal plants belonging to 136 genera were gathered from the study area, which comes under 62 angiospermic families, of which Fabaceae, Asteraceae, Acanthaceae, Zingiberaceae, Caesalpiniaceae, Lamiaceae, Euphorbiaceae, Verbenaceae, Asclepiadaceae and Solanaceae are the dominant families.

In terms of percentage of plant part used, leaf 62%, whole plant 26%, fruit/unripe fruit 19%, root 18%, rhizome/ruber/rulb 16%, bark 14%, flower / inflorescence 12%, stem 8 %, seeds 8%, exudation/resin 5% and buds 3%.

Medicinal plants from the study area are used to cure 82 diseases such as asthma, scabies, blood purification, rheumatism, diabetes, jaundice, epilepsy, piles, dysentery, obesity, scabies, gastric ulcer, dental problems, hair fall etc. The Kanis use 30 plants belonging to 23 families and 28 genera for treating various poisonous bites such as dog bite, snake bite, scorpion sting and unknown insect bite.

The medicinal plants are used directly or made into decoction, infusion, mixture, juice extract, powder and fumes for treating the diseases.

Conservation of ethnobotanical resources and wild relatives of crop plants are vital for future breeding programmes. The search for economic and medicinally important plants used by tribes and aboriginals must be continued. Their conservation is necessary to secure supplies of food, fibre, drugs and medicines. The over utilization of medicinal plants will lead to the destruction of the preferable plant materials and will
result in endemic condition. It is also necessary to ensure that loss of species does not impair the effective functioning of ecological processes.

In recent times, serious threats of biopiracy and intellectual property rights (IPR), with huge economy stake, have necessitated the early bio-prospecting of the medicinal plants used in the folklore. In this process, the first and foremost step would be the documentation of the ethnomedicinal uses of plants, as attempted in the present study, throughout the country. Simultaneously, this indigenous knowledge could be translated into commercial products on industrial scale and benefit sharing with all stake holders. Such a strategy would ensure that our bioresources are not pirated.

The most serious threat to medicinal plant wealth is indiscriminate habitat destruction, by expansion of agriculture land, grazing and over exploitation. The over exploitation of medicinal plants should be banned with the help of Government trainees / promoters for providing ideas to the tribal people for the conservation of medicinal plants and their importance. The conservation of the medicinal plants can be enhanced by the cultivation of medicinal plants by the tribals.

Presently very few elders in the community practice herbal cure, while the young and current generation knows little or nothing about the traditional herbal medicines. If this trend continues, a few years from now, there will not be even a single elder member in this community who knows the wealth of medicinal plants of Nedumangadu Taluk.