SUMMARY AND CONCLUSION
SUMMARY

The present ethnobotanical and ethnopharmacological studies conducted among the Koraga and Mavilan tribes of Kasaragod district have revealed several valuable information. The study area is surrounded by three forest districts, North by Dakshin Kannada having one National Park and two Wildlife Sanctuaries, east by Kodagu district and having one National Park and two Wildlife Sanctuaries and on south by Kannur district having one Wildlife Sanctuary and one Elephant Corridor.

The climatic condition varied due to the physical features and topography of the area. In the plains, the climate is generally hot. Though the mean maximum temperature is only around 90 F, the heat is oppressive in the moisture laden atmosphere of the plains. Humidity is very high and rises to about 90 per cent during the south-west monsoon. The annual variation of temperature is small; the diurnal range is only about 100 F.

Five groups of scheduled tribes are present in the district. They are Koraga, Mavilan, Adiyan, Malavettuvan and Malakkudiya. Out of these tribal communities, Koraga and Mavilan communities were selected for the present study. The Koraga are one among the primitive tribes and they are living only in Kasaragod Taluk. Mavilan tribal communities are inhabiting in the eastern belt of Kasaragod district and adjoining areas Kannur. They have their own culture and life style.

Information were gathered and documented through personal interviews and group discussions. 106 informants from both communities responded. Specimens and photographs of documented plants were also collected.

The informants were of the age group of 40-90. It is observed that the longevity of the tribes is high, Valiya Mani (Plate 1 D), Mavilan tribal head of Panathur is 110 years old. The tribes of Kasaragod are extremely different from other tribes of Kerala in their life style. Most of them are scattered in different localities even in Kasaragod town. There is no population in forest area. The typical hut is replaced by modern houses built by the government. These local inhabitants have strong faith in traditional and indigenous system of medicine and are well versed with the utilization of plants of their surroundings through trial and error methods. The documented data were cross checked with elderly people especially with tribal heads. The data collected thus were categorized in to mainly ethnomedicinal and non ethnomedicinal. The ethnomedicinal information again
categorized in to single drug and poly herbal formulations. The non ethnomedicinal plants further classified in to edible and miscellaneous use.

IMPORTANT FINDINGS

Floristic findings
- The present study documented 243 plant species; 240 angiosperms and 3 non angiospermic plants (one gymnosperm and 2 pteridophytes).
- Among these three plant species are coming under vulnerable category, 10 species under endemic category and 17 plants species exotic.
- 240 angiosperms come under 191 genera and 76 families.
- Out of 240 angiosperms 205 are dicots and 35 monocots.
- Euphorbiaceae family is the dominant family followed by Fabaceae and Lamiaceae.
- The life forms of plant species showed clear dominance of shrubby vegetation followed by trees, herbs and climbers.
- 74% of the plant species are wild, obtained from nearby forests or collected from the surrounding wastelands. 26% of the plant species from cultivation.

Ethnobotanical findings
- Present ethnobotanical study documented 243 plant species belonging to 80 families used by the Koraga and Mavilan tribes to meet their nutritional and primary healthcare needs.
- A total of 201 plant species belonging to 74 families constitute 284 single drug administrations. 128 single drug information were documented from Koraga tribe and 156 single drug information from Mavilan tribe. These 284 information are used to cure 101 of ailments.
- There are 195 poly herbal information (149 plant species under 64 families). 110 poly herbal information are from Koraga and 85 information from Mavilan tribe. These 295 information are applicable for 75 types of ailments/conditions.
- 42 plant species are exclusively used for the preparation of poly herbal formulations.
- 104 types of ailments are documented; mainly jaundice, stomach ache, diabetes, snake bite, urinary calculi, rheumatism, cuts and wounds are the dominant ailments.
Asparagus racemosus Willd. is the dominant species in single drug information and Cuminum cyminum L. is the major ingredients in poly herbal information.

Almost all the plant parts are used for making necessary preparations to cure about 104 different kinds of ailments. Leaves are the major plant part used, followed by root and whole plant.

In drug administration internal or oral administration is headed over external administration.

In form of application ground paste, expressed juice and decoction are standing first, second and third positions.

A total of 132 non ethnomedicinal (56 Koraga information and 76 Mavilan information) information were documented. 97 plant species belonging to 49 families are used for edible purpose (edible fruit, leafy vegetables, tubers, rhizome etc.), fodder, basket making, fencing etc.

36 edible fruits, 15 leafy vegetables, 7 edible seeds, 11 tubers/rhizomes, 6 plants for making baskets and its accessories, 17 plants as fodder, 31 miscellaneous (ethnoveterinary plants, used for hair tonic, dye, fibre, used as natural shampoo, fencing, insect repellent, flavoring agent) were documented.

34 nutracetical preparations were documented. These preparations are mainly in the form of porridge.

Documented the preventive, promotive, corrective and curative aspects of health care systems followed by the tribes.

The quantification study on 10 selected medicinal plants showed that the annual collection of Sida spp, Emblica officinalis and Asparagus racemosus are coming in the first, second and third positions.

**Ethnopharmacological findings**

25 information on hepatoprotective activity were documented of which 11 single drug administration (Mavilan 6 information, Koraga 4 information and 1 Koraga and Mavilam information) and 14 poly herbal formulations (Mavilan 5 information, Koraga 9 information).

Lepidagathis keralensis Madhu & Singh belonging to the family Acanthaceae and Memecylon randerianum SM Almeida & MR Almeida belonging to the family Melastomataceae were selected for Hepatoprotective screening.
The ethnopharmacological study for anti hepato toxins induced by Carbon tetrachloride (CCl₄) and Paracetamol. Administration of LP and MC (200 Mg/Kg) almost normalized these defects in the histological architecture of the liver resembling that of silymarin treated groups, showing its potent hepatoprotective effects.

CONCLUSION

The Koraga and Mavilan tribal people of Kerala form a very small proportion of the total population, but they deserve a special attention not only as the early inhabitants of the land but also as a group which remains separated from the mainstream of economic and social environment. The collection, identification and documentation of ethnomedicinal data on biological resources are inevitable steps for bio prospecting. To understand the therapeutic potential of the traditional medicine, there is a need for more studies of traditional health care practices though Pharmacological and clinical research.

There is mounting evidence from many of the world’s nations that formally involving user communities can strengthen forest management systems, making them more responsive to local needs. The land use systems and the resource manager’s institutions of ethnic minority groups in Kerala are in a process of change. The indigenous knowledge of Koraga and Mavilan tribes on the wild as well as some cultivated medicinal plants can contribute to the monitoring and study of changes in biodiversity. While local involvement creates opportunities for community income generation while providing health services for neighboring populations. One can conclude that;

- The present investigation brought to light some rare and important ethnomedicinal and non ethnomedicinal information used by the Mavilan and Koraga tribal communities of Kasaragod district.
- The study has also helped to understand how ancient human health of wealth was safeguarded by tribal customs and traditional medicinal systems.
- Even today thousands of local and indigenous people of Kasaragod district rely and continue to depend on plant resources for curing various diseases and also depend for their valuable nutritional supplements for their day to day needs.
- Further this can open a new vista in medico-botanical systems to find remedy to uproot incurable disease.
- Most of the poly herbal formulations are rare in the case of usage.
Many of the plants used by the Koraga and Mavilan tribal communities of Kasaragod district are promising material for further investigation.

Ethnopharmacological studies of two selected plant species is effective and proved the accuracy of indigenous knowledge.

This may lead to the designing of new drug related benefit sharing.

Suggestions

The documentation and protection of indigenous knowledge should be done. As a part of

Modern civilization our rich treasure house of wisdom is in the verge of extinction.

Forests are the blessing to mankind. This unavoidable resource provides food and shelter for wild animals, unpolluted rivers and streams for fishing, fertile soil, innumerable variety of edible plants, medicinal plants, house building materials and many other resources of small and larger market economics. So the conservation of this rich resource should be done for future use.

Sustainable utilization of biological resources must be organized and practiced for the area

Environmental education and awareness programme should be carried out to aware the local communities with effective conservation method and resource utilization.

Restoration and cultivation of native plant species especially the plant species having the root as the officinal part should be promoted.

Encourage medicinal plant based home garden to maintain stable productivity in ecosystem and sustainable utilization.

The grazing of animals and felling of trees in the area may be prevented or reduced.

The area is subjected to high soil erosion. Effective measures like planting of protective plants may be promoted.