CHAPTER VI

6. SUMMARY AND CONCLUSION

6.1 SUMMARY

Lung cancer, a disease characterized by uncontrolled cell growth in the lungs, is the leading cause of cancer deaths in both men and women and accounting for approximately 20% of all cancers. The overall 5-year survival rate remains disappointing at 15% or less and more people die every year due to lung cancer than that of breast, prostate, pancreas and stomach cancers combined. The incidence of lung cancer still remains very high with the consumption of cigarettes continuing to grow every year and the complete avoidance of cancer-causing foods is difficult. Globally, tobacco use is the single most important risk factor causing about 22% of cancer deaths and 71% of lung cancer deaths. It has been well established that tobacco smoke contributes to tenfold increase in risk in long term smokers as compared with nonsmokers. Tobacco smoke contains more than 60 established carcinogens. Among the constituents of tobacco smoke, the polycyclic aromatic hydro-carbons (PAHs) as Benzo(a)pyrene (B(a)P) play a major role in lung carcinogenesis. B(a)P was the first carcinogen to be detected in cigarette smoke. Since the mechanism of carcinogenesis is similar in animals and humans.

Medicinal plants are becoming popular both in developed and developing countries as the demand for developing better, safe and specific drugs is high. In...
recent years, there has been considerable emphasis on the identification of plant products with antioxidant property, as free radicals are considered to play a major role in most of the diseases including cancer. Phytochemicals, including those obtained from fruits, vegetables, nuts and spices, have drawn a considerable amount of attention due to their ability to selectively kill tumor cells and suppress carcinogenesis in preclinical animal models. A large number of these plant-derived substances have been shown to significantly prevent or delay cancer development in several high risk populations. The medicinal values of the chosen plant *Corallocarpus epigaeus* rhizome extract (CERE) is higher. Hence, in the present study an attempt has been made to create an animal model with using Benzo(a)pyrene (B(a)P) induced lung cancer and the anticancer efficacy of the CERE was evaluated.

6.2 CONCLUSION

The findings of the phytochemical analysis and anticancer activity of *Corallocarpus epigaeus* rhizome extract was recorded and presented here.

6.2.1 Phytochemical analysis

The phytochemical analysis of *Corallocarpus epigaeus* rhizome extract (CERE) showed the following results

- The qualitative analysis showed that the presence of flavonoids, terpenoids, steroids, tannin, saponins, glycosides, phlobatannins, carbohydrate,
SUMMARY AND CONCLUSION

triterpenoids, alkaloids, anthroquinones, polyphenol while Phlobatannins were absent.

- Significant amount of total phenol (156.52±10.95mg/gm), Tannin (67.85±4.74mg/gm) steroids (35.45±2.48mg/gm) and flavonoids (95.32±6.67mg/gm) was presented.

- Calcium, Magnesium, Potassium, Sulphate, Phosphate, sodium, Chloride and Nitrate were present while and iron were absent. The vitamins C and E were present while vitamin A and D were absent.

- The prevailing compounds were 2-Hexadecen-1-ol, 3,7,11,15-tetram, 9-Octadecenoic acid, Octadecanoic acid, methyl esters, 1-(+)-Ascorbic acid 2,6-dihexadecanoate, Oleic Acid, 9,12-Octadecadienoic Acid (Z,Z), Octadecanoic Acid, Methyl Ester, Octadecanoic acid, 1,2-Benzenedicarboxylic acid and Stigmast-5-en-3-ol were identified from Corallocarpus epigaeus extract by Gas Chromatogram-Mass spectrometry (GC-MS) analysis.

- HPLC profiles of Corallocarpus epigaeus were analysed and two phenolic compounds, namely Quercetin and Gentisic acid were identified from Corallocarpus epigaeus extract.

- The ethanolic extract of the Corallocarpus epigaeus rhizome was screened for in vitro antioxidant activity by oxygen radical scavenging such as DPPH, total antioxidant assay, superoxide metal chelation and iron...
reducing power activity at different concentrations. Throughout the studies rhizome extract showed marked antioxidant activity.

6.2.2 Anticancer activity

The current evidence from experimental studies demonstrate that supplementation of *Corallocarpus epigaeus* rhizome extract (CERE) has potential anticancer activity in Benzo(a)pyrene (B(a)P) induced lung cancer were evidenced by

- Significantly decreased the lung carcinogenesis markers.
- Enhanced the lungs and liver antioxidant defense.
- Regulated the glucose metabolizing enzymes
- Improved the glycoprotein content.
- Restored the membrane ATPase activity
- Preserved the liver functions.
- Normalize the hematological profile
- Restored the architecture of lung was confirmed by histopathological studies.

From the above results concluded that supplementation of *Corallocarpus epigaeus* rhizome extract (CERE) was able to prevent malignancy. It was effective in inhibiting tumor growth in solid tumor model. The present investigation highlights the chemo preventive potential of CERE in B(a)P induced lung carcinogenesis which might be due to the antioxidant and detoxification
mechanisms. Decrease in serum tumour markers and transaminase enzymes maintained the functional integrity of the membrane because of the protective effect of CERE. The biochemical, morphological and histological studies also supported the chemo preventive properties of CERE. Our study confirms that CERE plays dual role by blocking carcinogen metabolic activation and enhancing carcinogen detoxification. This proven anticancer activity of CERE is mainly attributed to the presence of enriched therapeutic phytochemical constituents such as flavonoids, alkaloids, tannin, steroids, terpenoids etc. Overall, the experimental studies suggest that Corallocarpus epigaeus rhizome extract (CERE) possess anticancer activity. This study is the first scientific report that provides convincing phytochemicals and ethnopharmacological evidence for the relevance of Corallocarpus epigaeus rhizome, thus providing scientific validity to its traditional consumption by the local populace of south India.