ABSTRACT

Medicinal plants are of great importance to the health of individuals and the society. The medicinal value of the plants lies in some chemical substances that produce a definite physiological action on the human body. In this study we examined the phytochemical screening, antibacterial and antioxidant properties, therapeutic potential of the leaf extracts of *Eurya japonica* Thunb. and *Ficus auriculata* Lour. plant species and lastly we tried to isolate and characterize the fractions from the leaf extract of the plants under study.

Phytochemical analysis is the characterization of an active principle responsible for some toxic or beneficial effect shown by a crude plant extract. The Phytochemical screening of *Eurya japonica* Thunb. has shown the presence of alkaloids, glycosides, flavonoids, terpenoids, saponins, tannins and reducing sugar while in *Ficus auriculata* Lour., has shown the presence of alkaloids, glycosides, flavonoids, terpenoids, tannins and reducing sugar but saponins was found absent. Several phytoconstituents like flavonoids, phenolics and polyphenols, tannins, terpenoids, sesquiterpenes etc., are considered to have effective medicinal properties such as antimicrobial, anti-inflammatory, tonic and stimulating activities. The presences of these phytochemicals are known to have therapeutic activity against several diseases and could suggest its traditional use for the treatment of various diseases. Therefore, these findings of phytochemicals were good enough to reflect their importance that can be used for further analysis on the medicinal properties of the plants under study.

Their antibacterial activities were tested using some Gram positive bacteria (*Staphylococcus aureus*) and Gram negative bacteria (*Escherichia coli, Klebsiella pneumonia* and *Pseudomonas* species) by disc diffusion method. The disc diffusion method for antibacterial activity of the plant extracts showed significant reduction in the bacterial growth in terms of zone of inhibition around the discs. The results of the antibacterial activity screening support the ethno-medical use of these plants. Based on these results further studies on the biochemical characteristics of the leaf extract of *Eurya japonica* Thunb. and *Ficus auriculata* Lour., were undertaken.
Halliwell and Gutteridge (1999), have proposed to define an antioxidant as "any substance that, when present at low concentration compared with those of an oxidizable substrate, significantly delays or prevents oxidation of that substrate". An antioxidant is a molecule capable of slowing or preventing the oxidation of other molecules. Oxidation is a chemical reaction that transfers electrons from a substance to an oxidizing agent. Oxidation reactions can produce free radicals, which start chain reactions that damage cells. Antioxidants terminate these chain reactions by removing free radical intermediates, and inhibit other oxidation reactions by being oxidized themselves. There is a great deal of research interest in natural antioxidants. Therefore, it is necessary to screen out the medicinal plants for their antioxidant potentials. The antioxidant studies were carried out to determine the antioxidant activity of selected medicinal plants namely *Eurya japonica* Thunb. and *Ficus auriculata* Lour. and to estimate their total phenolic and total flavonoid content. DPPH (2, 2-diphenyl-1-picryl hydrazyl) radical scavenging capacity and reducing power assay (RPA) were done for evaluating the *in vitro* antioxidant activity. Total phenolic content (TPC) was estimated by Folin-Ciocalteau’s method as described by Waterman and Mole (1994) and total flavonoid content by Aluminium chloride colorimetric method as described by Dewanto et al., (2002). All the extracts exhibited good antioxidant activities. This study validated the medicinal potential of the leaves and the positive relationship between total phenolic, total flavonoid content and the antioxidant activities.

In traditional practice, these two medicinal plants namely *Eurya japonica* Thunb. and *Ficus auriculata* Lour are used for the control of diabetes mellitus (DM) by the rural people in Manipur. DM has recently been identified by Indian Council of Medical Research (ICMR) as one of the unmanageable diseases for which satisfactory treatment is not available in modern allopathic system of medicine and therefore suitable herbal preparations are to be investigated. Diabetes mellitus affects more than 10% of the population and is the fifth most common cause of death worldwide. In the present study attempt has been made to investigate the blood sugar lowering activity and antihyperlipidemic activities of the methanol leaf extract of *Eurya japonica* Thunb. and *Ficus auriculata* Lour. in normal and STZ induced diabetic mice to ascertain and justify their ethnobotanical uses. In the light of the results of the present investigation, it was
concluded that the antidiabetic effect of *Eurya japonica* Thunb. and *Ficus auriculata* Lour. is promising. The histopathological studies of pancreas, liver and kidney have showed to ameliorate the streptozotocin induced histopathological damage of the islets of langerhands in the pancreas, improve the regenerative features of hepatocytes in liver and healing & normalization of glomerulus, absence of inflammatory cells, improvement in basement membrane and capillaries in the kidney which were comparable to that of glibenclamide treated mice. This further supports that the leaf extract of *Eurya japonica* Thunb. and *Ficus auriculata* Lour. has favorable effects to improve function of pancreas, liver and kidney and inhibit the histopathological changes of Pancreas, liver and kidney in the STZ induced diabetic mice. Further pharmacological and biochemical investigations should clearly elucidate the mechanism of action and should be helpful in projecting this plant having therapeutic potential in diabetes research.

Therefore, attempt has been made to isolate and characterized the fractions from the leaf extract of *Eurya japonica* Thunb. and *Ficus auriculata* Lour. Two fractions namely EJ-1 from *Eurya japonica* Thunb. and FA-1 from *Ficus auriculata* Lour. have been isolated from the leaf extracts of the plants. The compound isolated from the leaf extract of *Eurya japonica* Thunb. was found to be a glycosidic compound with its IUPAC name: 6-(2-hydroxybenzyloxy)-3,4,5-trihydroxy-tetrahydro-2H-pyran-2-yl)ethoxy)-3-methylpent-4-enal.

The structure of the isolated colpound is elucidated as follows:
However, due to the presence of some impurities in the isolated fraction (FA-1) of *Ficus auriculata* Lour. the probable structure of the isolated fraction couldn't be revealed. It transpired that the fraction is a mixture of similar group of compounds which eluted together with column chromatography and which could not be separated on TLC. Therefore, further isolation of the extract of *Ficus auriculata* Lour. is suggested to corroborate the antidiabetic activity of the extract and determination of bioactivity of the isolated fraction.

As a result of the present studies, embodied in this dissertation, we have been able to isolate a tentative compound from *Eurya japonica* Thunb. and isolate a fraction from *Ficus auriculata* Lour. For optimization of bioactivity and to know the potency as antidiabetic property of the isolated fractions further research work is necessary.

To conclude, the experiments were carried out appropriately, the handling of the data were correct, and the overall information that retrieved via the present studies justified the undertaking of the present research work.