CHAPTER 3

OBJECTIVES AND PLAN OF WORK

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The objective of the proposed research work was to develop pharmacognostical, phytochemical and pharmacological profile of some antioxidant and nephroprotective herbal drugs. That will be used for the identification, authentication and to detect adulteration and to establish quality, safety of the herbal drugs.

1. Collection and authentication of the selected herbal drugs.
2. To established the quality standards of the selected herbal drugs.
3. To develop molecular and analytical markers.
4. Preparation of extract of the selected herbal dugs.
5. *In vitro* and *in vivo* anti oxidant activity of the selected herbal dugs.

PLAN OF WORK (YEAR WISE):

- **Ist Year**
  - Literature survey
  - Collection and authentication of the selected herbal drugs.
  - Preliminary studies of drugs
- **IInd Year**
  - To develop molecular and analytical markers.
  - Extraction of the selected herbal dugs.
  - *In vitro* anti oxidant activity of the extracts.
- **IIIrd Year**
  - Evaluation of nephroprotective activity of the extracts.
  - Showed significant *in vitro* anti oxidant activity.
  - Computation of results and preparation of thesis

NEED OF STUDY:
In both developing and developed countries quality, purity of the herbal raw materials and final products is becoming a need today due to the rising demand for herbal medicines. Non viability of rigid quality control information for herbal raw materials and their preparations is one of the major problems faced by the user industry. Standardization and quality control of *C. intybus, L.sativum* and *A. Marmelos* is the need of the day for better acceptance of these herbal drugs in national and international market. Quality standards of aforesaid drugs were established as per WHO guidelines which may be used as reference for the preparation of monograph and standardization of these drugs. Plants and their extracts have found important role in advanced medicine, due to their constituents in natural medicinal chemicals.
The bio products and secondary metabolites of the plants works together to exhibit a wide range of pharmacological activities. Kidney disease, arthritis, inflammation, hypertension, fever and pain are common problems which found in general population that have significant action on lifestyles and health. Worldwide for cure of fever, inflammation and pain NSAIDs are mainly used. Presently, on the other hand some time side effects of existing drugs mainly gastric ulcer, hypertension, renal damage, bronchospasm occurs. Due to poor climatic conditions in developing countries infections and superficial wounds are common. The need for new antimicrobial agents is justified because microbes have the genetic ability to develop resistance to antibiotics and have become a universal global healthcare problem in the future. In recent era, due to several pharmacological activities with significance effects and minimum side effects many natural products (alkaloids, flavonoids, polyphenols, coumarins and steroids) obtained from medicinal plants. Kidney ailments are valuable for various disorders such as nephrosis, congestive heart diseases and most importantly hypertensive patients, blood pressure diminishing and decline cardiac work load. It also cures the hyper calciuria, liver cirrhosis.

Most of the chemicals affect the kidney. In which some of them chemicals contributes end phase renal disease and as a result add considerably to overheads of health care. For the reason that kidney’s large functional reserve of the kidney masks dysfunction signs. Due to earlier analysis of renal disease is tricky. So for this several studies intended to understand the mechanisms and fundamental chemicals which goal many renal cells that delivered an adequate amount of perceptive for a sensible risk assessment. At hand is still vital need to worth mechanisms principal to organ dysfunction and renal cell injury also.

Nephrotoxicity induced by gentamicin has been found to be a multifaceted observable fact and characterized by boosting effect in urea, uric acid serum, creatinine, and BUN levels and danger proximal renal tubular necrosis which followed by renal failure. The pathogenesis of gentamicin nephrotoxicity shown by experiment evidence of vast body that indicated reactive oxygen species (ROS) is involved.

The cisplatin chief’s side effect is nephrotoxicity. An antioxidant set imbalance due to unnecessary ROS growth by cisplatin. This leads to GSH depletion and lipid peroxidation. So there are constant investigation running for compounds that gives nephroprotection in opposition to the renal impairment which caused via drugs such as cisplatin and gentamicin. In favor of this the allopathy offers no any remedial actions. Therefore it is very important that human being turns to the side of other substitute of medicine for solace. Thus in present study is an effort to monitor the herbal extract for their nephroprotective activity.

In recent times herbal medicines paying attention as another choice of medicine which is beneficial for preventing or curing the disorders related to lifestyle like nephrotoxicity. But fairly modest data are accessible as regards to its mode of action. So a budding interest in the plant products analysis that encouraged widespread research for their potential health benefits.

Plant may serve as the alternative sources for the development of nephroprotective agent due to their biological activities. Several plants used in different system of traditional medicine have shown diuretic activity when tested on animal models. Some nephroprotective and diuretic drugs use in indigenous system are Phyllanthus amarus, Mahonia aquifolium, Azadirachta indica etc.
However no scientific data is available for selected drugs to claimed there nephroprotective activity. For that reason, this study was designed to investigate the protective effects of different extract of these drugs by cisplatin and gentamicin induced nephrotoxicity. The plants to be studied have been selected on the basis of their use in traditional system, review of the literature and their availability. Following plants have been selected, *Lepidium sativum, Cichorium intybus, Aegle marmelos* for the study.