CHAPTER 2

STATEMENT OF PURPOSE
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2.1 Need of the Study

Despite considerable progress in the treatment of skin infection by antimicrobial agents, search for newer and novel therapeutic drugs and formulations continues. In recent times there has been renewed interest in the herbal remedies as the existing synthetic drugs have several limitations. Medicinal plants are an integral part of human health care system. India is one of twelve leading bio-diversity centers with presence of over 45,000 different plant species. There has been resurgence in uses of herbal medicine in the past few years, not only among the traditional medicinal users but also among the modern consumers of herbal products. Herbal preparation called “Phytopharmaceuticals” or “phytomedicine” are preparation made from different parts of plants. Many countries have included herbal products in their National Health Programs and National Health Schemes as an important alternative for treatment of various ailments. The difference in the mode of usage of these herbal products from past to present can be noticed when we glance at the various standardized and formulated herbal products in the markets.

The WHO has also recognized the integrated system of medicine to reach the goal of health for all. Therefore, it now becomes important to validate their traditional herbal medicine as potential therapeutic agents and bring international acceptance. As per the WHO definition of herbal medicines, these are formulations prepared as finished herbal products or mixture herbal products which may contain excipients in addition to the active herbal ingredients.

The increasing prevalence of multidrug resistant strains of bacteria and the recent appearance of strains with reduced susceptibility to antibiotics raises the specter of untreatable bacterial infections and adds urgency to the search for new infection-fighting strategies. Contrary to the synthetic drugs, antimicrobials of plant origin are not associated with many side effects and have an enormous therapeutic potential to heal many infectious diseases. [1-5] There are many potential plants with medicinal properties in the repertoire of traditional systems of Indian medicines such as Ayurveda, Unani and Siddha, Melaleuca leucadendron Linn and Pandanus tectorius soland ex Parkinson are two such plants that have been used traditional for the treatment of skin ailments. Scientific data was observed to be very empiric and hence there is a need for more extensive research on these indigenous plants and development of herbal products using current methodologies and modern techniques.
2.2 Scope of the Study

Skin infections are the major problem of the developing countries. Everyone has faced the discomfort of microbial infection at one time or another. Over the years, many different compounds and formulations have been used for antimicrobial action. Also most of the prior antimicrobial formulations include ingredients that are not always eco-friendly and are therefore economically unviable. Some of the prior antimicrobial formulations also contain components that are ultimately harmful to the skin. The use of natural herbs for manufacture of antimicrobial products is becoming more popular.

2.3 Objective of Study

The objective of the present study was to develop a novel herbal dermal formulation using essential oil obtained from *Melaleuca leucadendron* Linn leaves and extracts of *Pandanus tectorius soland ex Parkinson* leaves so as to provide a natural herbal based antimicrobial activity over the skin. Further the formulation developed should be effective, easy to use, non-irritant and cosmetically acceptable.
2.4 Scheme of work

Part I

1. Extensive Literature review.
2. Procurement, collection and Authentication of Plant material.

Part II

1. Pharmacognostic studies of Melaleuca leucadendron Linn & Pandanus tectorius leaves.
2. Extraction of Essential oil from Melaleuca leucadendron leaves and successive solvent extraction of Pandanus tectorius leaves.
3. Phytochemical characterization of extracts.
4. Antimicrobial studies of extracts.

Part III

1. Preformulation studies.
2. Development of Topical Dermal Herbal Formulations.
3. Evaluation of Formulation for various Parameters
   a) Physical appearance
   b) pH
   c) Extrudability
   d) Spreadability
   e) Viscosity

Part IV

1. Optimization of Developed Formulation using Factorial Design.
2. Antimicrobial studies of Developed Formulations
3. Stability studies
4. Skin irritancy studies

Part V

1. Compilation of Data
2. Statistical Analysis, Results & Discussion and Conclusion.
3. Thesis writing and Submission.