AIM & OBJECTIVE OF RESEARCH WORK

The prime aim of the present research work was to develop and evaluate topical herbal drug delivery system of *Embelia ribes* (Vidang). Embelin is a major constituent of Vidang and has a very strong spectrum of activity as antibacterial and antifungal agent especially against *Trichophyton* and *Microsporum* species of dermatophytes and *candida* species. Hence Vidang was chosen as a drug to formulate topical drug delivery system.

The targeted tissue in infectious skin diseases is the skin itself. Systemic effects are regarded as adverse effects of the treatment of infectious skin reaction. Topical application of antifungal agent is intended not only to achieve higher local drug concentrations but also to avoid the adverse effects of systemically administered formulations.

To achieve the desired therapeutic effect, topical delivery of drug requires to reside the drug at the site of infection for prolonged period as well as to protect from the hostile environmental conditions. Hence the choice of the suitable base plays an important role to prolong the contact of drug with infected part.

Another challenge is that embelin is poorly soluble in water. To circumvent this problem, there is a need to select appropriate co-solvent system to improve dissolution and release of the drug at the targeted tissue.

A 3^2 full factorial design was used to evaluate the effect of semisolid bases and co-solvent on the release profile and prolong adherence of the drug delivery device at the targeted tissue as well as to find out the statistically optimized formulation of the topical herbal drug delivery system of the Vidang extract.

The major objectives of research work are:

A) Literature survey.

B) Selection of the effective herbal drug (Vidang) according to literature survey.

C) Evaluation of Vidang fruit.

- Authentication
- Organoleptic property
- Quantitative Standards
- Chemical tests

D) Estimation of embelin by U.V. Spectrophotometrically.

- Determination of absorption maxima
- Plotting of calibration curve

E) Extraction of powder of Vidang fruit by continuous soxhlet method.

F) Chromatographic evaluation and standardization of Vidang extract.

- TLC method
- HPTLC method

G) Formulations of topical Vidang gel and cream by using 3^2 full factorial design.

H) Pharmatechnical evaluation of topical Vidang gel and cream.

- Physical appearance
- pH measurements
- Viscosity measurements
- Spreadability
- Drug content
- *In vitro* diffusion study
- *Ex vivo* permeation study

- *In vitro* antifungal study using cup-plate method

I) Statistical optimization of topical Vidang gel and cream formulation by using 3^2 full factorial design.

- Optimization of Viscosity
- Optimization of $T_{50\%}$ (Time required for 50% release of drug)
- Optimization of DR_1 (Drug release at 1 hr)

J) Formulation and evaluation of the statistically optimized topical Vidang gel and cream.

K) Stability studies of optimized formulations as per ICH guidelines.