CHAPTER 3

Research Envisaged
3. RESEARCH ENVISAGED

3.1 RATIONALE

3.2 AIM

3.3 OBJECTIVES
3.1 Rationale
Skin is a major candidate and target of oxidative stress. This oxidative stress occurs due to various endogenous and exogenous factors which lead to skin aging process. These factors lead to generation of free radicals i.e. ROS, which can cause cell death. These ROS advance skin aging, which is characterized by wrinkles and a typical pigmentation. It is generally hypothesized that wrinkles and loss of elasticity results from the abnormal, fragmented and cross-linked elastin and collagen bundles present in dermis of skin (Tripathi & Shrivastava 2010) (Lavker 1995). Increase activity of collagenase and elastase enzymes are linked with degradation of these ECM proteins, hence topical applications of antioxidants with specific inhibition activity of these enzymes for protection of ECM can be a useful approach to prevent the skin damage and prevent pre-mature aging of the skin. Recently, number of studies have been interested in interactions between elastase and its inhibitors (Edwards & Bernstein 1994) (Bizot et al. 1995). Furthermore, plant sources have been evaluated for developing natural antioxidants that may be involved in anti-aging and anti-wrinkle care (Kim et al. 1995) as plants offer a vast array of secondary metabolites which can be used as an active ingardients in skin care formulations.

Acne is a disease of the sebaceous follicle. It generally begins in puberty, when androgen levels increase significantly and stimulate excess sebum secretion (Scholl et al. 1984) (Lookingbill et al. 1985). The normal bacterial flora of the skin includes P. acnes, S. epidermidis and S. aureus which proliferate during puberty and are often involved in the development of acne (Hamnerius 1996). In many countries, the most commonly used systemic antibiotic treatments for acne vulgaris are erythromycin, clindamycin, and tetracycline. However, antibiotic resistance for P. acnes and S. epidermidis has been rising steadily since the 1980s (Rosso 2008). For many years antibiotics have been used for the treatment of acne. However, resistance to antibiotics has increased and in a multifactorial manner, which includes the bacteria-antibiotic relationship, the type of antibacterial, and the characteristics of the host, among others. To overcome the problem of resistance to antibiotics, medicinal plants have been studied extensively as an alternative treatment. Herbal actives with anti-acne properties are a very good alternative (Diaz et al. 2011). Plants can be evaluated...
for antimicrobial and antioxidant activity in order to find the new cosmeceuticals agent for acne vulgaris.

Traditional herbal medicines provide fascinating, largely unexplored source for development of potential new drugs. The potential use of traditional herbal medicines for development of skin-care cosmetics is a new and upcoming trend (Kiken & Cohen 2002). Keeping in view; we have selected Indian medicinal plants, to study their anti-aging ability through antioxidant and anti-enzymatic activity and anti-acne effects through antimicrobial activity.

3.2 Aim

- Evaluation of herbal actives for skin care.

3.2 Objectives:

- Selection, collection and extraction of plants.

- Evaluation of selected plant extracts for anti-aging activity using antioxidant and anti-enzyme assays.

- Evaluation of selected plant extracts for anti-acne activity using antimicrobial and anti-enzyme assays.

- Isolation and identification of herbal actives by HPTLC-Bioautography and GC-MS analysis.