OVERALL CONCLUSIONS
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This study on Anti-aging Cosmeceuticals is an amalgamation of Market Research and Consumer Behaviour (Part I) and Experimental Research (Part II)

The Market Research and Consumer Behaviour study shows –

1. Skin care has emerged as a dynamic sector over past few years and the most important segment going forward is the Anti-aging segment. Anti-aging cosmeceuticals i.e. the products which improve the skin health and have anti-aging properties are growing in demand and are forecasted to rise worldwide. The most influential angle over the coming years will be the links between internal health, beauty, and anti-aging.

2. Irrespective of the age, sex, qualification, and profession, people have a strong desire to look young. They consider appearance to be an important part of the personality and youthful looks as a source that gives boost to their confidence.

3. People have good awareness about aging, premature aging, visible signs of aging, and anti-aging therapies. The most preferred line of treatment amongst people is Ayurveda and most preferred product forms are creams and lotions.

4. Consumers expect anti-aging cosmeceutical products to serve all the functions of treating, protecting, and nourishing the skin. It should reduce wrinkling, make the skin softer and smoother, make the complexion fairer, protect the skin from harmful effects of sun, etc. Despite expecting miraculous results from cosmeceutical products, the consumers are ready to spend only INR100-500 monthly on such products.

The Experimental Research study shows –

1. *Amalaki* shows strong antioxidant activity by various in-vitro methods (DPPH scavenging, Reducing power, Nitric oxide scavenging, ORAC assay, Lipid peroxidation). Thus it has wide application in the fields of medicine, pharmacutics, and cosmeceutics.

2. *Amalaki, Shorea robusta resin*, and *Yashada bhasma* didn’t show any Elastase inhibition activity by Insoluble Elastin method and SANA method thus indicating that the anti-aging effect by means of inhibiting elastase enzyme proteolytic action on elastin fiber.
of the skin can’t be exhibited by them. *Amalaki* shows Hyaluronidase inhibition activity thus it can protect degradation of hyaluronic acid and can prevent the undesirable effects on skin as drying, roughening and wrinkling due to excessive degradation of hyaluronic acid thereby delaying the signs of aging. *Amalaki* also shows Tyrosinase inhibition activity thus showing depigmentary action and possible usage in anti-aging and skin whitening or fairness products.

4. Five different anti-aging cream variants based on *Shorea robusta* resin and Flax seed oil as the cream base were formulated. *Shorea robusta* resin acted as the sole emulsifier for all the cream formulations.

5. The addition of *Yashada bhasma* in the anti-aging cream variants comprising of *Shorea robusta* and Flax seed oil base, demonstrates good anti-wrinkle activity on application before exposure to UV radiations. Histological examination shows marked reduction in elastosis. It also demonstrates good wound healing activity which was evident by increase in wound contraction, skin breaking strength and hydroxyproline content, indicative of good cell regeneration and collagen synthesis hence proposing it to be a prospective anti-wrinkle preparation.

6. Flax seed oil showed the presence of ALA as the main Omega 3 fatty acid. Cow Ghee showed the presence of Omega 3 fatty acids (ALA, EPA, DHA) and Omega 6 fatty acids (GLA, AA) but the most significant was the presence of ALA.

7. Out of the five cream variants only those comprising of *Yashada bhasma* along with *Shorea robusta* resin extract in Flax seed oil showed good anti-wrinkle activity. The presence of *Amalaki* and Cow Ghee didn’t show any contribution towards the anti-wrinkle activity.

8. The HPTLC densitograms obtained for the study materials, *Shorea robusta* resin extract and cream variants could not be used for drawing any conclusions due to the lack of identification of any marker compound. However the patterns are still presented with the idea of depicting how the HPTLC pattern under specified chromatographic conditions looked like. The HPTLC fingerprint patterns thus has been stored for future references.