



# GUJARAT TECHNOLOGICAL UNIVERSITY

(Established by Government of Gujarat under Gujarat Act No. : 20 of 2007)

ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી

(ગુજરાત સરકારના ગુજરાત અધિનિયમ ક્રમાંક : ૨૦/૨૦૦૭ દ્વારા સ્થાપિત)

Accredited with A++ Grade by NAAC

## Abstract of the Thesis



Name: **JETHVA MONICA JAYESHBHAI**

Enrollment No.: **199999901510**

Faculty: **PHARMACY**

Discipline/Branch: **PHARMACY**

Title of the Thesis: **DEVELOPMENT OF HERBAL FORMULATION FOR  
SKIN CARE**

### **Abstract**

**Research Problem:** To develop and evaluate a nano-herbal cream containing solid lipid nanoparticles (SLNs) loaded with aqueous extracts of *Nelumbo nucifera*, *Averrhoa carambola*, *Nigella sativa*, and *Sphaeranthus indicus* to improve stability, skin penetration, and topical delivery for skin ageing and acne.

**Methodology Followed for Research:** Herbal extract-loaded SLNs were prepared by the microemulsion method and characterized using particle size analysis, SEM, and FTIR. The SLNs were incorporated into an oil-in-water cream and evaluated for pH, homogeneity, spreadability, acid value, saponification value, and total phenolic content.

**Outcome of the Research:** The SLNs exhibited spherical morphology with particle sizes of 48–68 nm and showed good compatibility with excipients. The formulated herbal cream demonstrated satisfactory physicochemical properties and was suitable for topical application.

**Application:** The developed SLN-based herbal cream can be used as a nano-cosmetic preparation with improved stability, sustained release, enhanced skin penetration, and potential benefits in the management of skin ageing and acne.



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**This PhD Thesis will help in or would be useful for:** to formulate nano-based cream, gel, lotion, or ointment with improved efficacy using herbal ingredients enhanced drug delivery & demonstrates how SLNs augment the penetration, stability and controlled release of herbal bioactive compounds through the skin. It can be used by pharmaceutical and cosmetic companies to develop innovative herbal nano-formulations for commercial skin-care products. It identifies research gaps and provides a foundation for further studies on nanoparticles based herbal drug delivery systems. This PhD thesis is useful for **advancing the development of effective, safe, and scientifically validated herbal skin-care products using solid lipid nanoparticle technology**, with applications in research, education, pharmaceuticals, and the cosmetic industry.

## List of Publication(s):

- 1) Monica J. Jethva, Mamta B. Shah, FORMULATION & EVALUATION OF HERBAL CREAM CONTAINING SOLID LIPID NANOPARTICLES, International Journal Of Educational Research 131 (2025), 139-150, [DOI.ORG/10.1050/j.ijer.2025.10142](https://doi.org/10.1050/j.ijer.2025.10142).
- 2) Monica J. Jethva, Mamta B. Shah, "**Preparation, characterization, and evaluation of solid lipid nanoparticles containing Herbal extracts**", International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-5162, Vol.12, Issue 6, page no.e515-e523, June-2025, Available :<http://www.jetir.org/papers/JETIR2506458.pdf>

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