

# CHAPTER 5

## AYURVEDIC DRAVYAGUNA

### Doctoral Theses

01. Dr. VISHAL KUMAR  
**Wound Healing Activity of Pectin Based Biocomposites Of Gojihva [Launaea nudicaulis (L.) Hook. f.] and Shati (Hedychium spicatum Sm.) in Diabetic Rat Wound Models and Chronic Wound Patients: An Exploratory Study.**  
Supervisors : Dr. Shivani Ghildiyal and Prof. Tanuja Nesari  
Th 28549

#### *Abstract*

Humans are using natural resources for food, fodder and medicine since time immemorial. Ayurveda documented the secret of nature in Ayurveda classics and enriched it through their intuitive brains and experience. A good number of herbs and their dosages forms are enumerated in Ayurveda classics for health promotion and mitigation of various diseases including wound. Chronic wounds have significant burden on scientific community as it cost in billions for health care providers. Gojihva [Launaea nudicaulis (L.) Hook. f.], and Shati (Hedychium spicatum Sm.) are the herbs which are not evaluated for chronic wounds in biocomposite form. In the present study after pharmacognostical, physico-chemical characterization of Gojihva and Shati, biocomposite of both herbs were developed using pectin polymer and casting method. Biocomposites were tested for their wound healing activity in comparison to their Kwatha (decoction) through experimental study (excision and incision diabetic rat wound model) and exploratory clinical study. In excision wound model the four groups and standard bitadine showed significant result in wound surface area healed (Mean±SEM in cm<sup>2</sup>) Gojihva biocomposite 4374.5±69.2, Shati biocomposite 3886.2±304.6, Gojihva Kwatha 3768.2±147.1, Shati Kwatha 3341.3±252.8, Bitadine 4192.8±132.2 at p<0.001, p<0.001, p<0.01, p<0.05, p<0.001 respectively. In incision wound model all four groups showed significant results in tensile strength (wound breaking strength) 37.67±2.35, 44.33±1.38, 50.67±2.19, 64.83±1.08, 74.67±2.55 respectively at p<0.001. In clinical study the four groups showed significant results in Visual Analog Scale Score 4.80±0.611, 3.50±0.65, 4.80±0.85, 3.70±0.65 and Bates-Jensen Wound Assessment Tool 16.10±1.32, 17.20±1.43, 18.60±1.22, 15.10±1.47 respectively at p<0.05. Thus, both the classical formulation Kwatha and integrative technologically developed biocomposite showed significant results in both experimental and exploratory clinical study. However, the biocomposite is readiment, patient friendly, easy to apply and remove form.

*Contents*

1. Introduction 2. Review of Literature 3. Materials & Methods 4. Observations and Results 5. Discussion 6. Summary. 7. Conclusion. Future Scope & Limitations. Bibliography. Annexures.

02. DR. SHETTY (Shifa P)

**Wound Healing Activity of Pectin Based Biocomposites Of Gojihva [Launaea nudicaulis (L.) Hook. f.] and Shati (Hedychium spicatum Sm.) in Diabetic Rat Wound Models and Chronic Wound Patients: An Exploratory Study.**

Supervisors : Prof. (Dr.) Tanuja Manoj Nesari, Dr. Meena Deogade,  
Dr. Shivani Ghildiyal and Dr. Bhargava Bhide

Th 28776

*Abstract*

This study explores the immunomodulatory effects of Vidanga Tandula Rasayana (VTR) through experimental and clinical evaluations. Based on a formulation described in Sushruta Samhita, VTR combines Vidanga (*Embelia ribes*) and Yastimadhu (*Glycyrrhiza glabra*) with honey, working on the principles of Ayurveda's Rasayana therapy, which is known for its immune-enhancing properties. Given the increasing global interest in herbal immunomodulators, this research aims to provide scientific validation for its efficacy. A preclinical study was conducted using Wistar albino rats, assessing humoral and cell-mediated immunity via SRBC-induced antibody response and delayed hypersensitivity models. The results demonstrated a dose-dependent biphasic response, where lower doses suppressed IgG levels, while higher doses significantly increased IgG and improved cytokine regulation (IL-4, IL-5), while also reducing inflammatory markers. The observed hormetic response suggests VTR's dose-dependent immunomodulatory effects, making it a potential complementary therapy for immune function modulation. Following this, a single-blind, randomized, placebo-controlled clinical trial was conducted on 100 individuals with low immunity, screened using the Immune Status Questionnaire (ISQ). Participants received either VTR or a placebo for 30 days, with immune markers and quality-of-life parameters assessed. The VTR group showed statistically significant improvements in IgG modulation, ISQ scores, cytokine balance, and overall vitality (Ojas, Agnibala, Dehabala, and Satvabala) compared to placebo. Analytical studies were done to validate the standardization, purity, and bioactive components of VTR through HPTLC, LC-MS, and FTIR analyses, ensuring its safety, efficacy, phytochemical standardisation, profiling, quality control and authentication. In conclusion, Vidanga Tandula Rasayana demonstrates promising immunomodulatory properties, with both preclinical and clinical evidence supporting its role as a potential immune enhancer. This study highlights the integration of Ayurvedic principles with modern research methodologies, paving the way for further clinical applications in immune health and disease prevention.

*Contents*

1. Introduction 2. Review of Literature 3. Analytical Study 4. Pre-Clinical Study 5. Clinical Study 6. Discussion 7. Summary and Conclusion. Bibliography. Annexures.