

# Preparation and assessment of a herbal mouthwash with antibacterial properties for dental disease

A Thesis submitted

to



**Chhattisgarh Swami Vivekanand Technical University**

**Bhilai (C.G.), India**

*In partial fulfillment*

*For the award of the Degree*

*of*

**Bachelor of Pharmacy**

by

**Shivani Sharma**

**Enrollment No: BH7153**

**University Roll No:**

**312205119055**

**Under the Guidance of**

**Suchita Wamankar**

**Associate Professor**



**Rungta Institute of Pharmaceutical Sciences**  
**Rungta Knowledge City, Kohka-Kurud Road, Bhilai – 490024 (C.G.)**

**Session: 2022-2023**

# Preparation and assessment of a herbal mouthwash with antibacterial properties for dental disease

A Thesis submitted

to



**Chhattisgarh Swami Vivekanand Technical University**

**Bhilai (C.G.), India**

*In partial fulfillment*

*For the award of the Degree*

*of*

**Bachelor of Pharmacy**

**By**

**Shivani Sharma**

**Enrollment No: BH7153**

**University Roll No: 312209055**

**Under the Guidance of**

**Suchita Wamankar**

**Associate Professor**



**Rungta Institute of Pharmaceutical Sciences  
Rungta Knowledge City, Kohka-Kurud Road, Bhilai – 490024 (C.G.)**

**Session: 2022-2023**

### **Declaration by the Candidate**

I the undersigned solemnly declare that the report of the thesis work entitled **‘Preparation and assessment of a herbal mouthwash with antibacterial properties for dental disease’**, is based on my own work carried out during the course of my study under the supervision of **Suchita Wamankar**

I assert that the statements made and conclusions drawn are an outcome of the project work. I further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/deemed University of India or any other country. All helps received and citations used for the preparation of the thesis have been duly acknowledged.

---

(Signature of the Candidate)

Name of candidate : Shivani  
Sharma

Roll no.

312204119055

Enrollment no.

BH7153

---

**Signature of the Supervisor**

**Suchita Wamankar**

**Associate Professor**

**Rungta Institute of pharmaceutical science, Bhilai**

## Certificate of the Supervisor

This is to certify that the report of the thesis entitled “*Preparation and assessment of a herbal mouthwash with antibacterial properties for dental disease*”, is a record of bonafide research work carried out by *Shivani Sharma* bearing Roll No.312204119055 & Enrollment No. BH7153 under my guidance and supervision for the award of degree of Bachelors of pharmacy in faculty of B.Pharmacy of Chattisgarh Swami Vivekanand University Bhilai (C.G),India. To the best of my knowledge and belief the thesis

- ❖ Embodies the work of the candidate him/herself,
- ❖ Has duly been completed,
- ❖ Fulfills the requirement of the ordinance relating to the ME/MTech degree of the University and is up to the desired standard both in respect of contents and language for being referred to the examiners.

Designation:

student

Department:

B.Pharmacy

---

(Signature of theCandidate)

Name :Shivani Sharma  
Rungta institute of pharmaceutical science,  
Bhilai

Forwarded to Chhattisgarh Swami Vivekanand Technical University, Bhilai

---

(Signature of the Director/Principal)

Name &address of the Institute

### **Certificate by the Examiners**

The Thesis entitled “*Preparation and assessment of a herbal mouthwash with antibacterial properties for dental disease*” Submitted by *Shivani Sharma* (Roll No.312204119055 Enrollment No.BH7153) has been examined by the undersigned as a part of the examination and hereby recommended for the award of the degree of Bachelors of pharmacy in the faculty of Bachelors of Pharmacy of Chhattisgarh Swami Vivekanand Technical University, Bhilai.

---

Internal Examiner

Date:

---

External Examiner

Date:

## Acknowledgment

“TO ACCOMPLISH GREAT THINGS, WE MUST NOT ONLY ACT BUT ALSO DREAM, NOT ONLY PLAN BUT ALSO BELIEVE.” The completion of this dissertation is not only fulfillment of my dreams but also the dreams of my family who have taken lots of pain for me in completion of my higher studies. Words are very poor comforters to explain the deep debt of gratitude which once feel in once corner of the heart when one is helped to achieve the ultimate goal, in this boundless and endless field of research work, but since there is no other way which can be better express once feeling of love and gratitude then this, I wish to take this opportunity to take thank the following who have assisted with the completion of this project. I am in debited to my guide **Suchita Wamankar**, Associate Professor for her constant support and encouragement, deep inspiration and co-operative nature with due respect in my heart and thank for continuous support and guidance in the project work. I express my profound indebtedness to our **Principal Dr. Rajesh Kumar Nema** , Rungta Institute of Pharmaceutical Science, Bhilai for providing me necessary facilities and valuable cooperation for completing this project work.

I would also extend my gratifying acknowledgment my all respected teachers for their suggestions and support in making the project fruitful. I am highly obliged and thankful to all non teaching staff, Office workers, Lab technician, Librarian of Rugta institute of pharmaceutical

Lastly, I convey my deepest regard to my parents for their immense support and encouragement without which I would not have been here. Last but not the least, I thank my internal belief “God-the almighty” who always flower his blessing on me. Thanks to one and all.

---

(Signature of the student)

Name: Shivani Sharma

Name & Address of the Institute:  
Rungta Institute of Pharmaceutical  
Science

## ABSTRACT

Aqueous leaf extract of a tropical variety of *Psidium guajava* L. (Myrtaceae), *Azadirachta indica* (Meliaceae) & *Glycyrrhiza glabra* (Leguminosae) was used to formulate fifteen batches of herbal mouthwash. The antimicrobial potentials of these herbal mouthwash formulations in oral hygiene were assessed in vitro using a modification of the conventional methods for evaluating oral antiseptics. Formulations containing *Psidium guajava*, *Azadirachta indica* & *Glycyrrhiza glabra* leaf extract and a standard mouthwash (Povidone iodine, Chlorhexidine & Geofresh) served as test samples and controls respectively. The mouthwash formulations were screened for antimicrobial activities against cultures of *Staphylococcus aureus*, *Escherichia coli* and *Bacillus subtilis*. The extinction time of each formulation batch was determined against each test organism. The fifteen batches containing aqueous extract showed a high level of activity against the test organisms- *E. coli* and *S. aureus* comparable to the activity shown by the standard mouthwash (Povidone iodine, Chlorhexidine & Geofresh). The study encourages further stability and In vivo assessment to develop *P. guajava*, *A. indica* & *G. glabra* leaf extract as an ingredient of commercial mouthwashes.

**KEYWORDS:** Antimicrobial, Herbal Mouthwash, *Psidium Guajava*, *Azadirachta*, *Indica*, *Glycyrrhiza Glabra*

## Table of Contents

Declaration by the candidate		
Certificate of the supervisor		
Certificate of the examiner		
Acknowledgement		
Abstract		
List of tables		
List of figures		
Chapter -1	Introduction	1-10
Chapter-2	Literature review	11-16
Chapter-3	Methodology materials and methods	17-25
Chapter -4	Results and discussions	26
Chapter -5	Conclusions	27
References		28-34



## List of Tables

Sr. no	Table no.	Contents	Page no.
1.	1.1	Information of guava	8
2.	1.2	Information of neem	9
3.	1.3	Information of liquorice	9
4.	3.1	List of materials	22
5.	4.1	<b>The test of stability study of herbal mouthwash</b>	26

## List of Figures

Sr. no.	Figure no.	Contents	Page no.
1.	3.1	Guava leaves	18
2.	3.2	Neem leaves	19
3.	3.3	Liquorice stems	20
4.	3.4	Herbal extract	23
5.	3.5	Herbal mouthwash	23

## List of Figures

.