

DECLARATION

I, **HAJERA HAFEEZ D/O MOHAMMED ABDUL HAFEEZ SHAREEF** resident of, Falt No. 101, Hr Galaxy Apartment 399-1, A Janaki Nagar Colony, Toli Chowki Hyderabad- 500008, hereby declare that the research work incorporated in the present thesis entitled “**DESIGN AND DEVELOPMENT OF AN OPTIMAL FORMULATION OF JUGLANS REGIA FOR THYROID FUNCTION**” (डिजाइन एंड डेवलपमेंट ऑफ एन ऑप्टिमल फॉर्मूलेशन ऑफ जुगलांस रेजिया फॉर थाइरॉइड फंक्शन) is my original work. This work (in part or in full) has not been submitted to any University for the award or a Degree or a Diploma. I have properly acknowledged the material collected from secondary sources wherever required.

I solely own the responsibility for the originality of the entire content.

Signature of the Candidate

Date:

FACULTY OF PHARMACY
PACIFIC ACADEMY OF HIGHER EDUCATION AND
RESEARCH UNIVERSITY, UDAIPUR

Dr. MAYA SHARMA

Associate Professor,

CERTIFICATE

It gives me an immense pleasure in certifying that the thesis “**DESIGN AND DEVELOPMENT OF AN OPTIMAL FORMULATION OF JUGLANS REGIA FOR THYROID FUNCTION**” (डिजाइन एंड डेवलपमेंट ऑफ एन ऑप्टिमल फॉर्मूलेशन ऑफ जुगलांस रेजिया फॉर थाइरॉइड फंक्शन) and submitted by **HAJERA HAFEEZ** is based on the research work carried out under my guidance. He / she have completed the following requirements as per Ph.D. regulations of the University;

- (i) Course work as per the university rules.
- (ii) Residential requirements of the university.
- (iii) Regularly presented Half Yearly Progress Report as prescribed by the university.
- (iv) Published / accepted minimum of two research paper in a refereed research journal.

I recommend the submission of thesis as prescribed/notified by the University.

Date:

Name and Designation of Supervisor

Dr. MAYA SHARMA

Associate Professor,
Pacific College of Pharmacy,

CERTIFICATE

It gives me an immense pleasure in certifying that the thesis “**DESIGN AND DEVELOPMENT OF AN OPTIMAL FORMULATION OF JUGLANS REGIA FOR THYROID FUNCTION**” (डिजाइन एंड डेवलपमेंट ऑफ एन ऑप्टिमल फॉर्मूलेशन ऑफ जुगलांस रेजिया फॉर थाइरॉइड फंक्शन) and submitted by **HAJERA HAFEEZ** is based on the research work carried out under my guidance. He / she have completed the following requirements as per Ph.D. regulations of the University;

- (i) Course work as per the University rules.
- (ii) Residential requirements of the University.
- (iii) Regularly presented Half Yearly Progress Report as prescribed by the University.
- (iv) Published / accepted minimum of two research paper in a refereed research journal.

I recommend the submission of thesis as prescribed/notified by the University.

Date:

Name and Designation of Co-Supervisor

Dr. MOHAMMED MAJID IQBAL

Professor,
Mesco College of Pharmacy,
Hyderabad-500006

COPYRIGHT

I, **HAJERA HAFEEZ**, hereby declare that the Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan, shall have the rights to preserve, use and disseminate this dissertation entitled “**DESIGN AND DEVELOPMENT OF AN OPTIMAL FORMULATION OF JUGLANS REGIA FOR THYROID FUNCTION**” (डिजाइन एंड डेवलपमेंट ऑफ एन ऑप्टिमल फॉर्मूलेशन ऑफ जुगलांस रेजिया फॉर थाइरॉइड फंक्शन) in print or in electronic format for the academic / research purpose.

Date:

Signature of Candidate

Place:

ACKNOWLEDGEMENT

In the name of ALLAH, the most gracious and the most merciful, all praise goes to ALLAH for helping me to finish this project satisfactorily. I would like to express my gratitude to all those who gave me the possibilities to complete this thesis. It is a matter of great pleasure and privilege to acknowledge all those who have put in efforts through the guidance and cooperation to help me complete my thesis successfully.

I take this opportunity to express my profound gratitude to **Dr. Hemant Kothari**, Dean. Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan, for his support in challenging times.

I acknowledge heartfelt thanks to my supervisor, **Dr. Maya Sharma** Associate Professor, Department of Pharmacy Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan, for all that she has done to guide and support me throughout this research project and guided me during the starting of my research until submission of the thesis.

I am grateful to **Dr. MD Majid Iqbal**, Co Supervisor, for their outstanding guidance, constant supervision and exemplary suggestions in and out of my project. Their constant encouragement helped me overcome the difficulties to complete my thesis.

It would be an incomplete acknowledgement without acknowledging the guidance and cooperation of Faculty members, Technical and non-technical staff of Department of Pharmaceutical Sciences Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan,

My sincerely thanks to all my friends, colleagues for their help during the period of study.

I cannot express my feelings in few words for the encouragement, inspiration, blessings, suggestions, affection, moral and emotional support from my beloved

Father, Mother, Husband, Sisters, and Children which became very fruitful in completing my project work.

All efforts have borne fruit with grace and blessings of the almighty God. Again; I thank the ALMIGHTY for giving me wisdom and good health.

Lastly, I would thank each and every one who have helped me in my study, throughout the period. Last but not the least, my distinctive thanks to *Nav Nimantran Thesis Printing & Binding, Udaipur*, for their role in shaping the matter, creative design work and bringing out this document meticulously, neatly and timely.

DATE: -

HAJERA HAFEEZ



DEDICATED TO
MY FAMILY, FRIENDS
AND WELL-WISHERS

ABBREVIATIONS

SYMBOL	DESCRIPTION
%	Percentage
µg	Micro gram
kHz	Kilohertz
pKa	Dissociation rate constant
HPTLC	High-performance thin-layer chromatography
λ_{max}	Maximum wavelength
% CDR	Percentage cumulative drug release
Conc.	Concentration
Abs	Absorbance
BCS	Biopharmaceutical classification system
Alc Ext	Alcoholic Extract
Aqu Ext	Aqueous Extract
ext	Extract
fig	Figure
g	Gram
°C	Degree centigrade
AUC	Area under curve
Cm	Centimeter
C_{max}	Maximum plasma concentration of the drug
FTIR	Fourier transform infrared radiation
NMR	Nuclear magnetic resonance
Gm	Gram

Hrs	Hours
DSC	Differential scanning calorimetry
IP	Indian Pharmacopoeia
Kg	Kilogram
Mg	Milligram
Min	Minute
ml	Millilitre
Nm	Nanometre
pH	Negative logarithm of hydrogenion concentration
RH	Relative humidity
RPM	Revolution per minute
UV	Ultraviolet
w/v	Weight by volume
w/w	Weight by weight
Vs	Versus
SEM	Scanning Electron Microscopy
KV	kilovolt
ICH	International Conference of Harmonization
>	Is greater than
<	Is less than