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I, **Ashok Kumar Dogra**, declare that the thesis entitled, “**Vitamin D Receptor Gene Polymorphisms (VDR) and Steroid Receptor Status in Breast Cancer Patients**” is my own work conducted under the supervision of **Dr. Archana Prakash (Supervisor)** and (**Co-Supervisors**) **Dr. Sanjay Gupta and Dr. Meenu Gupta** at Swami Rama Himalayan University, Dehradun, **Department of Biochemistry** approved by D.R.C.

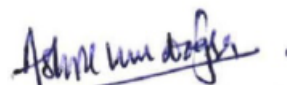
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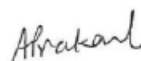
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Supervisor
Dr. Archana Prakash,
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Co-Supervisor
Dr. Sanjay Gupta,
Prof. and Head, Dept. of Biosciences

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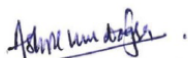
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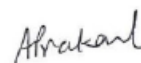


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Research and Development Cell
Swami Rama Himalayan University
Swam. Ram Nagar, Jolly Grant
Dehradun-248016, Uttarakhand, India

**“VITAMIN D RECEPTOR GENE POLYMORPHISMS
(VDR) AND STEROID RECEPTOR STATUS IN
BREAST CANCER PATIENTS”**



**Thesis Submitted In Partial Fulfillment of The Award
of Degree of Doctor of Philosophy
In The Department of Biochemistry**

SUBMITTED BY

ASHOK KUMAR DOGRA

SUPERVISOR

Dr. Archana Prakash, Prof. Dept. of Biochemistry

CO-SUPERVISOR

Dr. Sanjay Gupta, Prof. and Head, Dept. of Biosciences

Dr. Meenu Gupta, Prof, Dept. of Radiation Oncology

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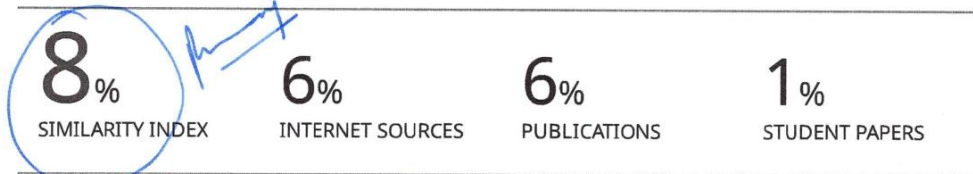
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Research and Development Cell
Swami Rama Himalayan University
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Swam, Ram Nagar, Jolly Grant
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Sanjay Gupta 

Director Research
Research and Development Cell
Swami Rama Himalaya University
Swami Ram Nagar, Jolly Grant
Dehradun-249019, Uttarakhand, India

CERTIFICATE OF VIVA-VOCE OF Ph.D.
STUDENT

**“VITAMIN D RECEPTOR GENE
POLYMORPHISMS (VDR) AND STEROID
RECEPTOR STATUS IN BREAST CANCER
PATIENTS”**

Submitted by
Ashok Kumar Dogra

For the degree of
Doctor of Philosophy in

Biochemistry

is evaluated and approved by

Archana

Prof. (Dr). Archana Prakash
SUPERVISOR

EXAMINER

Prof. (Dr). Sanjay Gupta
CO-SUPERVISOR

Prof. (Dr). Meenu Gupta
CO-SUPERVISOR

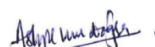
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Ashok Kumar Dogra
Roll No. SRHU1900385
Department of Biochemistry,
Swami Rama Himalayan University,
Jolly, Grant, Dehradun,
Uttarakhand, India
Pin. 248001

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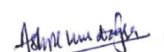
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Ashok Kumar Dogra

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LIST OF ABBREVIATIONS

AR	Androgen Receptor
ER	Estrogen Receptor
PR	Progesterone Receptor
Her2	Human epidermal growth receptor 2
VDR	Vitamin D receptor receptor
RXR	Retinoid X receptor
CDK	Cyclin dependant Kinase
UVB	Ultraviolet B
SNP	Single nucleotide polymorphism
RFLP	Restriction fragment length polymorphism
VNTR	Variable number of tandem repeats
LD	Linkage disequilibrium
DFS	Disease-free survival
OS	Overall survival
TNBC	Triple-negative breast cancer
HRT	Hormone replacement theory
PCR	Polymerase chain reaction
25-OHD3	25-hydroxyvitamin D3
1,25-OH2D3	1, 25-dihydroxy vitamin D3
MAPK	Mitogen-activated protein kinase
ERK	Extracellular signal-regulated kinase
EGFR	Epidermal growth factor receptor
GWAS	Genome-wide association study
RCT	Randomization control trials
HRE	Hormone-responsive genes

SERM	Selectable estrogen receptor modulators
DHT	Dihydrotestosterone
FISH	Fluorescence in situ hybridization
OR	Odd ratios
CI	Confidence interval