CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis, entitled **"Design and Development of Novel Drug Delivery Systems of Resveratrol for Treatment of Psoriasis"** in fulfillment of the requirements of the award of the degree of Doctor of Philosophy in Faculty of Pharmaceutical Sciences and submitted in Maharaja Ranjit Singh Punjab Technical University, Bathinda is an authentic record of my own work carried out during a period from 2016 to 2020 under the supervision of **Dr. Raj Kumar Narang.**

The matter embodied in this thesis has not been submitted by me for the award of any other degree of this or any other University/Institute.

(Bharat Khurana)

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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LIST OF ABBREVIATIONS USED

2-D	2-Dimension
3-D	3-Dimension
ANOVA	Analysis of Variance
BCS	Biopharmaceutical classification system
CAAs	Critical analytical attributes
CCD	Central composite design
CD	Cluster of Differentiation
CHOL	Cholesterol
CLSM	Confocal laser scanning microscopy
CMAs	Critical material attributes
CMC	Critical Micelle Concentration
CMPs	Critical method parameters
CPPs	Critical process parameters
CQAs	Critical quality attributes
DLS	Dynamic light scattering
DoE	Design of experiments
DPPH	2,2-diphenyl- 1-picrylhydrazyl
DSC	Differential scanning calorimetry
EDTA	Ethylene diamine tetra-acetic acid
EE	Entrapment efficiency
ELISA	Enzyme-linked immune sorbent assay
FbD	Formulation-by-design
FCCD	Face centred composite design
FD	Factorial design
FDA	Food and drug administration
FTIR	Fourier transform infrared
HLB	Hydrophilic lipophilic balance
HPLC	High-performance liquid chromatography
IAEC	Institutional animal ethics committee

IC_{50}	Half Maximal Inhibitory concentration
ICH	International conference on harmonization
IL-17	Interleukin 17
IL-23	Interleukin 23
IL-6	Interleukin 6
IMQ	Imiquimod
LOD	Limit of detection
MIE	Micellar incorporation efficiency
MMPS	Matrix metalloproteinases
MWCO	Molecular weight cut-off
NE	Nanoemulsion
NEG	Nanoemulgel
OVAT	One variable at a time
PASI	Psoriasis area severity index
PDI	Polydispersity Index
PEO	polyethylene oxide
PM	Polymeric micelles
PMG	Polymeric micellar gel
PPO	polypropylene oxide
PRESS	Predicted residual error sum of squares
PS	Particle size
QbD	Quality by design
QTPP	Quality target product profile
ROS	Reactive oxygen species
RPM	Revolution per min
RSM	Response surface modeling
SC	Stratum corneum
SD	Standard deviation
SD	Skin deposition
SIRT	Sirtuin
Smix	Surfactant/cosurfactant mixture
TEM	Transmission electron microscope
TNF-α	Tumor necrosis factor-alpha

UV	Ultraviolet