COMPARATIVE STUDY OF DIFFERENT CLOBETASOL PROPIONATE LOADED NANOCARRIERS TOPICAL SYSTEMS FOR THE MANAGEMENT OF PSORIASIS

A

THESIS

SUBMITTED TO

MAHARAJA RANJIT SINGH PUNJAB TECHNICALUNIVERSITY

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IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY
IN
PHARMACEUTICAL SCIENCES

By

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis, entitled **"Comparative study of different clobetasol propionate loaded nanocarriers topical systems for the management 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 2017 to 2022 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.

(Ankita Dadwal)

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

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The Ph.D. Viva-Voice examination of Ankita Dadwal, has been held on _____.

Sign. of Supervisor Sign. of External Examiner

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(Ankita Dadwal)

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LIST OF ABBREVIATIONS USED

ABC	accelerated blood clearance
ALA	5-aminolevulinic corrosive
APCs	Antigen presenting cells
ATP	Adenosine triphosphate
AUC	Area under curve
CD2	cluster of differentiation
CP	Clobetasol propionate
CPCSEA	Committee for prevention, Control and supervision of Experiments on Animals
DSC	Differential scanning calorimetry
EE	Entrapment efficiency
EPC	egg-yolk phosphatidylcholine
FA	Fluocinolone acetonide
PS-SCS	psoriasis stratum corneum substitute
GI	Gastrointestinal
H&E	hematoxylin and eosin
HBD-2	Human b defensin-2
HPH	High pressure homogenization
HPMA	poly[N-(2-hydroxypropyl) methacrylamide]
IAEC	Institutional Animal Ethical Committee
ICAM	intercellular adhesion molecule
ICH	International Conference of Harmonization
IFN	Interferon
IL	Interleukin
IL12B	interleukin-12 subunit beta
IMQ	Imiquimod
Lab	Labrasol

LFA	leukocyte function associated
LFA-3	lymphocyte function-associated antigen-3
LNPs	large-scale synthesis
mALA	methyl 5-aminolevulinic corrosive
MHC	major histocompatibility complex
MTX	Methotrexate
MW	molecular weights
NDDS	Novel drug delivery systems
NE	Nanoemulsion
NIPAM	N-isopropylacrylamide
NK	natural killer
NLCs	Nanostructured lipid carriers
NMFs	Normal moisturizing factors
NTPDase	Nucleoside triphosphate diphosphohydrolases
Or NS10	Oramix® NS10
PAcM	poly(N-acryloyl morpholine)
PASI	psoriasis area and severity index
PDI	polydispersity index
PDMA	poly(N,N-dimethyl acrylamide)
PEG	polyethylene glycol
PEVs	penetration enhancer-containing vesicles
PF68	Pluronic 68
PG	propylene glycol
PMOX	poly(2-methyl-2- oxazoline)
ppm	Parts per million
PS	Particle size
PSORS	Psoriasis susceptibility
PVP	poly(vinylpyrrolidone)

QbD	Quality by design
R&D	Research and development
rpm	Rotation per minute
SAR	structure–activity relationships
SC	Stratum corneum
SCS	stratum corneum substitute
SD	Skin deposition
SEM	Scanning electron microscopy
SFEE	supercritical fluid extraction of emulsions
SLN	Solid lipid nanoparticles
SPC	Soya phosphatidyl choline
TCR	T-cell receptor
TEM	Transmission electron microscope
Th1	T helper 1
Th17	T helper 17 cells
Th2	T-helper 2
TNF	tumor necrosis factor
TNF-α	Tumor necrosis factor-alpha
Trc	Transcutol
UV	Ultraviolet
VD	Volume distribution
VEGF	vascular endothelial growth factor
XRD	X-ray diffraction