A pharmaceutical study on the pulmonary delivery of an anti-asthmatic drug

A thesis submitted in partial fulfillment of the requirements for Master Degree in Pharmaceutical Sciences (Drug technology).

By

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Dedications

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List of Abbreviations

ANOVA	Analysis of variance
AUC	Area under the curve
BAL	Brochoalveolar lavage
CE	Complexation efficiency
CCI	Carr's compressibility index
CS	Chitosan
C_{max}	Maximum ketotifen concentration
CV%	Coefficient of variation percent
DS	Dextran sulfate
DLS	Dynamic light scattering
DSC	Differential scanning calorimetry
DMSO	Dimethyl sulfoxide
EE	Entrapment efficiency
FD	Freeze dried
2FI	Two-factor interaction
FT-IR	Fourier transform infrared spectroscopy
HCl	Hydrochloric acid
HGC	Hard gelatin capsule
HR	Hausner ratio
i.v.	intravenous
KT	Ketotifen
kV	Kilovolt
IR	Infrared
LEU	leucine
LH	Lung homogenate
ln	Natural logarithm
LPPs	Large porous particles

LOD	Limit of detection
LOQ	Limit of quantitation
UPLC	Ultra performance liquid chromatography
MMAD	Mass median aerodynamic diameter
mV	Millivolt
Mwt	Molecular weight
mW	Milliwatt
MPs	Microparticles
MS	Microspheres
nm	Nanometer
NCs	Nanocomplexes
ND	Not determined
NPs	Nanoparticles
NCs-in-MPs	Nanocomplexes-in-microparticles
PBS	Phosphate buffer solution
P/D	Polymer to drug ratio
PDI	Polydispersity index
PE	Polyelectrolyte
PECs	Polyelectrolyte complexes
PEO	Polyethylene oxide
pKa	Ionization constant
PK	Pharmacokinetic
PPO	Polypropylene oxide
PS	Particle size
$R_{\%0.5h}$	% release at 0.5 h
RP%	Respirable particle percent
RT	Respiratory tract
sd	Standard deviation

SD	Spray dried
SDP	Spray dried powders
SE	Standard error
SEM	Scanning electron microscopy
SI	Swelling index
SLN	Solid lipid nanoparticles
SS	Sum of squares
$T_{80\%}$	Time required for 80% release
$t_{1/2}$	Half-life time
TEM	Transmission electron microscope
TGA	Thermogravimetric analysis
TLC	Total leukocyte count
TSI	Twin stage impinger
VMD	Volume mean diameter
XRPD	X-ray powder diffraction
ζ	Zeta potential
λ_{max}	Wavelength of maximum absorption
Θ	Angle of repose