Ain Shams University
Faculty of Pharmacy
Department of Pharmaceutics and Industrial Pharmacy

Preparation and Evaluation of Medicated Intra-articular Delivery Systems

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

By

May El-Zanaty Abdel Motalleb Ali Abou El-Nour

Bachelor of pharmaceutical sciences, 2011, Ain Shams University
Teaching Assistant, Department of Pharmaceutics and Industrial Pharmacy
Ain Shams University

Under the supervision
Of

Prof. Dr. Ahmed Shawky Geneidy
Professor of Pharmaceutics and Industrial Pharmacy
Faculty of Pharmacy
Ain Shams University

Dr. Mahmoud Eid Soliman
Associate professor of Pharmaceutics and Industrial Pharmacy
Faculty of Pharmacy
Ain Shams University

Dr. Rania Aziz Ishak
Associate professor of Pharmaceutics and Industrial Pharmacy
Faculty of Pharmacy
Ain Shams University

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1,5,7-triazabicyclo[4.4.0]dec-5-ene	TBD
2,2- azobisisobutyronitrile	AIBN
Aggregates	A
Analysis of variance	ANOVA
Anti-citrullinated protein/peptide antibody	ACPA
Antigen-induced arthritis	AIA
Antigen-induced monoarthritis	AIMA
Area under the curve	AUC
Articular cartilage	AC
Biopharmaceutical classification system	BCS
Bone	B
Bone morphogenetic protein-7	BMP-7
Change in enthalpy	ΔH
Change in entropy	ΔS
Change in free energy of association	ΔG
Cloud point	Cpt
Coefficient of determination	R^2
Cohesive energy density	CED
Complete Freund's adjuvant	CFA
Composite injectable chitosan gels	CICGs
C-reactive protein	CRP
Critical micelle concentration	CMC
Critical micelle temperature	CMT
Cumulative percentage of drug released after 1 h	A_{1h}
Cyclooxygenase	COX
Desirability function	D
Dichloromethane	DCM
Difference between drug and polymer total solubility parameters	$\Delta\delta t$
Differential scanning calorimetry	DSC
Dimyristoyl phosphatidylethanolamine	DMPE
Dipolar parameter	δ_p
Disease modifying anti-rheumatic drugs	DMARDs
Dispersion parameter	δ_d
Drug-polymer interaction parameter	X_{sp}
Elastic/storage modulus	G´

Entrapment efficiency percent	EE%
Erosion	E
Ethyl 4-aminobenzoate	EAB
Experiments and Advanced Pharmaceutical Research Unit	EAPRU
Focal necrosis	N
Fourier transform infrared spectroscopy	FT-IR
Free radical polymerization	FRP
Gel	G
Gel permeation chromatography	GPC
Glass transition temperature	T_g
Granulation tissue	GT
Heat of vaporization	ΔH_v
High Resolution Field Emission Scanning Electron Microscope	HR-FESEM
Human leukocyte antigen	HLA
Hyaline cartilaginous lining	HC
Hydrogen bonding parameter	δ_h
Hydrophile-lipophile balance	HLB
Incomplete Freund's adjuvant	IFA
Inflammatory cell infilterate	IF
Interleukins	IL
Intra-articular	IA
Joint space	JS
Loading efficiency percent	LE%
Loose bodies	LB
Low critical solution temperature	LCST
Major Histocompatibility complex	MHC
Matrix metalloproteinases	MMPs
Melting point temperature	Tm
Methacrylate	MA
Methotrexate	MTX
Methoxy polyethylene glycol-polypropylene fumarate	mPEG-PPF
Methoxy-polyethylene glycol-co-poly-δ-decalactone	PEG-PDL
Microparticle	MP
Microparticles	MPs
Molar volume	V_m
Molecular weight	Mw
Monocyte chemoattractant protein-1	MCP-1
Monomethoxy-Polyethylene glycol	mPEG

Multinucleated osteoclasts	MNO
Nanoparticles	NPs
Non-significant	NS
Non-steroidal anti-inflammatory drugs	NSAIDs
Not applicable	NA
Not determined	ND
Nuclear Magnetic Resonance	NMR
Number-average molecular weight	Mn
One-factor-at-a-time	OFAT
Particle size	PS
Patchy chondral ossification	PO
Pentaerythritol tetra (3-mercaptopropionate)	PETMP
Phosphate buffer saline	PBS
Poly vinyl alcohol	PVA
Poly(D-Lactide)	PDLA
Poly(DL-Lactide)	PDLLA
poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide)	PEO-PPO-PEO
Poly(L-Lactide)	PLLA
Poly(N-isopropylacrylamide)	PNIPAAm
poly(polyethylene glycol methacrylate)	poly(PEGMA)
Poly-beta amino esters	PBAEs
Poly-caprolactone	PCL
Polydispersity index	PDI
Polyester amide	PEA
Polyethylene glycol methacrylate ethyl ether	PEGMA-EE
Polyethylene glycol methacrylate methyl ether	PEGMA-ME
Poly-glycolic acid	PGA
Poly-lactic acid	PLA
Poly-lactic-co-glycolic acid	PLGA
Polymer to drug ratio	P:D
Poly-δ-decalactone	PDL
Prostaglandin E_2	PGE_2
Receptor activator of nuclear factor-kB ligand	RANK-L
Response surface methodology	RSM
Rheumatoid arthritis	RA
Rheumatoid factor	RF
Ring opening polymerization	ROP

Scanning electron microscope	SEM
Size Exclusion Chromatography	SEC
Sodium carboxymethyl cellulose	Na CMC
Solid lipid nanoparticles	SLNs
Solubility parameter of drug	δ_s
Solubility parameter of polymer	δ_p
Span index	SI
Standard deviation	SD
Standard error of mean	SE
Static light scattering	SLS
Subchondral cleft	C
Subchondral cyst formation	CF
Temperature	T
Time at which 90% of drug released	$T_{90\%}$
Triamcinolone acetonide	TA
Triglycerol monostaerate	TG-18
Tumor necrosis factor-α	TNF-α
Tyramine modified hyaluronic acid	HA-Tyr
Viscous/loss modulus	G´´
Volume – weighted mean diameter	$D_{[4,3]}$
Wavelength at the maximum absorbance	λ_{max}
Weight average molecular weight	Mw

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