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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

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2019

Acknowledgment

All praise to **Allah** for enabling me to accomplish this work in its final form.

I would like to express my sincere gratefulness and deepest thanks to all my supervisors for their continuous advice, patience and valuable support throughout the development of this work.

My deepest thanks to **Prof. Dr. Ahmed Shawky Geneidy**, the professor of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Ain Shams University, for his instructive supervision, continuous guidance and generous attitude throughout the development of this work.

I would like to express my deepest appreciation and sincere gratefulness to **Ass. Prof. Dr. Mahmoud Eid Soliman** and **Ass. Prof. Dr. Rania Aziz Ishak**, the associate professors of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, Ain Shams University, for their continuous professional guidance, instructive supervision and encouragements.

I wish to express my great appreciation and thanks to **Ass. Prof. Dr. Luca Casettari**, Associate professor at department of Biomolecular Sciences, School of Pharmacy, University of Urbino Carlo Bo, Italy, and his team for their sincere work and effort in synthesizing the copolymers used in Chapter one of this thesis.

A very special thank you to my professors, colleagues and friends in the Pharmaceutics and Industrial pharmacy department, Faculty of

Pharmacy, Ain Shams University for their valuable help, support and continuous encouragement.

I would like to specially dedicate this work to my family; my dearest parents, sisters, husband and lovely daughter. None of this work would have been possible without your unconditional love, patience and continuous support. Thank you for being such a wonderful family.

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List of Abbreviations

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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	C _{pt}
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 infiltrate	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	T _m
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	M _w
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 monostearate	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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