

**DEVELOPMENT, CHARACTERIZATION AND EVALUATION
OF MESALAMINE LOADED PROBIOTIC BASED
MICROCARRIERS FOR THE MANAGEMENT OF
ULCERATIVE COLITIS**

A
THESIS
SUBMITTED TO



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UNIVERSITY BATHINDA (PUNJAB)**

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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 **“Development, Characterization and Evaluation of Mesalamine Loaded Probiotic Based Microcarriers for the Management of Ulcerative Colitis”** in fulfilment 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 2023 under the supervision of **Dr. Raj Kumar Narang** and co-supervision of **Dr. Uttam Kumar Mandal**.

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.

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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

AUC	Area under the curve
C _{max}	Maximum concentration of the drug
C _{max}	Maximum plasma drug concentration
CAP	Cellulose acetate phthalate
CFU	Colony forming units per gram
CRP	C-Reactive protein
DMSO	Dimethyl sulfoxide
ESR	Erythrocyte Sedimentation Rate
G.I.T	Gastrointestinal tract
GSH	Glutathione
IBD	Inflammatory bowel disease
IL -8	Interleukin-8
IL-23	Interleukin-23
<i>L. acidophilus</i>	<i>Lactobacillus acidophilus</i>
LPO	Lipid peroxidase
LPS	Lipopolysaccharide
MCC	Microcrystalline cellulose
Mes	Mesalamine
MPO	Myeloperoxidase
MRT	Mean residence time
NO	Nitric Oxide
PBS	Phosphate buffer solution
Pro	Probiotic
RH	Relative humidity
<i>S.boulevardii</i>	<i>Saccharomyces boulevardii</i>
SCF	Simulated colonic fluid

SGF	Simulated gastric fluid
SIF	Simulated intestinal fluid
T _{max}	Peak time when drug achieves
TNBS	2,4,6-Trinitrobenzenesulfonic acid
TNF- α	Tumor necrosis factor-alpha
UC	Ulcerative colitis
WBC	White blood cell