Ain Shams University
Faculty of Pharmacy
Microbiology & Immunology dept.

Improvement and Scaling Up of Rhamnolipid Production by a *Pseudomonas aeruginosa* Isolate

A Thesis

Submitted in Partial Fulfillment of the Requirements for the

PhD degree
In
Pharmaceutical Sciences
(Microbiology and **Immunology)**

By
Ghadir Saeed Mohammed EL-Housseiny
Master of Pharmaceutical Sciences, Microbiology & Immunology,
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Acknowledgements

*First, I would like to thank **Prof. Dr. Nadia Hassouna**, Professor of Microbiology and Immunology, Faculty of Pharmacy, Ain Shams University, for her sincere support, valuable advice and continuous guidance throughout the work.*

*I am deeply grateful to **Prof. Dr. Mohammed Mabrook Aboulwafa**, Professor and Head of Microbiology and Immunology Department, Faculty of Pharmacy, Ain Shams University for choosing this topic, scientific supervision and thorough revision of this thesis.*

*I am greatly indebted to **Assis. Prof. Khaled Anwar Aboshanab**, assistant Professor of Microbiology & Immunology, Faculty of Pharmacy, Ain Shams University for his constant effort, encouragement and follow up throughout this work.*

*A special thanks goes to **Assis. Prof. Rania Hathoot,** assistant Professor of Pharmaceutics, Faculty of Pharmacy, Ain Shams University for her help in the Design Expert and Graph Pad Prism softwares.*

*I would also like to thank all my **colleagues** and all **workers** in the Microbiology and Immunology Department, Faculty of Pharmacy, Ain Shams University for their help and support.*

*I cannot end without thanking my **family** for their endless love and encouragement which helped me to concentrate on my study.*

والحمد لله رب العالمين.....

Ghadir Saeed El-Housseiny

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List of Abbreviations

Adeq precision	Adequate precision
Adj R^2	Adjusted R^2
ANOVA	Analysis of variance
BBD	Box behnken design
BLAST	Basic Local Alignment Search Tool
cfs	Cell free supernatant
cfu	Colony forming units
CMC	Critical micellar concentration
C/N ratio	Carbon/ nitrogen ratio
CTAB	Cetyltrimethylammonium bromide
C- source	Carbon source
CV	Coefficient of variation
3D	Three dimensional
DO%	Dissolved oxygen %
ECH/I	Enoyl-CoA hydratases/isomerases
EDTA	Ethylene diamine tetra acetic acid
FAS	Fatty acid synthesis
GC	Gas chromatography
GMSM	Glycerol-mineral salts medium
Gy	Gray
HAQ	4-hydroxy-2-alkylquinolones
HLB	Hydrophilic lipophilic balance
HPLC	High performance liquid chromatography
HSL	Homoserine lactone
IDS	Initial dry solids
IS	Impregnating solution
ISPR	In situ product removal
LB	Luria Bertani
LC	Liquid chromatography

MEOR	Microbial enhanced oil recovery
MS	Mass spectrometry
MSM	Mineral salts medium
N- source	Nitrogen source
OD	Optical density
PQS	*Pseudomonas* quinolone signal
Pred R^2	Predicted R^2
QS	Quorum sensing
RI	Refractive index
RL	Rhamnolipid
rpm	Revolutions per minute
rRNA	Ribosomal ribonucleic acid
RSM	Response surface methodology
RTD	Resistance temperature detector
SMSM	Soybean oil-mineral salts medium
SLF	Submerged liquid fermentation
SSF	Solid state fermentation
SW agar	Siegmund Wagner agar
TLC	Thin layer chromatography
TSB	Trypticase soy broth
UV	Ultraviolet
v/v	Volume per volume
WAC	Wood activated charcoal