SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY STUDY OF SULFONAMIDE DERIVATIVES OF DISUBSTITUTED ANILINES

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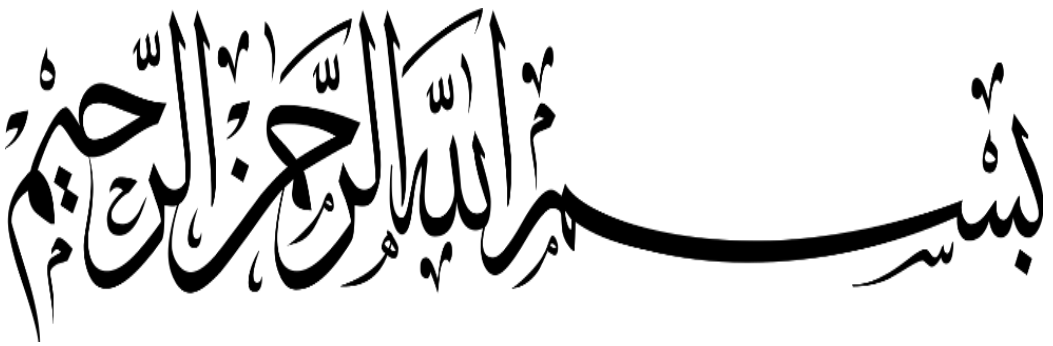
بسم الله الرحمن الرحيم

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A thesis submitted to the faculty of the Department of Chemistry, School of Science in partial fulfillment of the requirements for the degree of M.Phil. in Chemistry.

Thesis Committee:

1. _____

2. _____

3. _____

DEPARTMENT OF CHEMISTRY

SCHOOL OF SCIENCE

UNIVERSITY OF MANAGEMENT AND TECHNOLOGY, LAHORE, PAKISTAN2015

DEDICATION

Dedicated to my beloved Father,

Muhammad Younas

May Allah bless his soul.

ACKNOWLEDGEMENT

In the name of **Allah**, the Most Gracious and the Most Merciful. All praises to Allah for the strengths and His blessings in completing my thesis.

May Allah's peace and blessing be upon our Beloved Prophet Muhammad (PBUH) who was a mercy on us from Almighty Allah, whose character and nobility has never seen before and after Him (PBUH).

Special appreciation goes to my supervisor, **Dr. Suhail Nadeem** for his supervision and constant kind support. His invaluable help, full of constructive comments and suggestions throughout the experimental and thesis works has contributed to the success of this research.

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Last but not least, my deepest gratitude goes to my beloved parents**,** brothersand also to my sister for their endless love, prayers and encouragement.

Tahir Younas

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ABSTRACT

Sulfonamides due to their medicinal importance are under consideration by the researchers. Chloro substituted sulfonamide, **3a-b**, has been synthesized with high yields by a single step nucleophilic substitution reaction of disubstituted anilines, **1a-b**, and 4-chlorobenzenesulfonyl chloride (**2**) in a weak basic aqueous medium. The synthesized sulfonamides, **3a-b**, were further subjected to electrophilic substitution reaction using ethyl iodide (**4**), benzyl chloride (**5**) and 4-chlorobenzyl chloride (**6**) in such a solvent which is polar aprotic to get *N*-substituted derivatives, **7a -b, 8a-b** and **9a -b**, respectively. The suggested structures of all the prepared molecules were characterized using IR, ^{1}H-NMR and EIMS spectroscopic analysis. All these di-substituted sulfonamides were also evaluated for

their enzyme inhibition capacity, against lipoxygenase (LOX) and bacterial strains of Gram bacteria.

Overall Scheme:

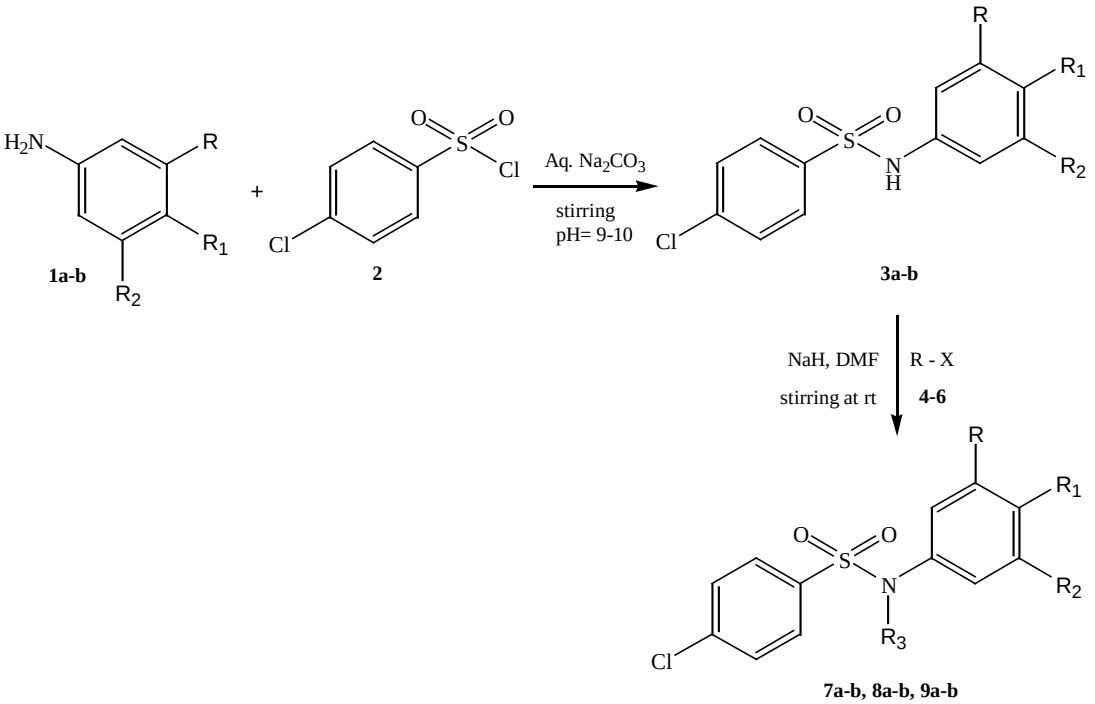

Table-A:

Compound	R	R_1	R_2	R_3
7a	CH_3	CH_3	H	CH_3CH_2
7b	CH_3	-	CH_3	CH_3CH_2
8a	CH_3	CH_3	H	$C_6H_5CH_2$
8b	CH_3	-	CH_3	$C_6H_5CH_2$
9a	CH_3	CH_3	H	4-$ClC_6H_5CH_2$
9b	CH_3	-	CH_3	4-$ClC_6H_5CH_2$

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NOMENCLATURE

Serial No	Abbreviations	Detail
1	NMR	Nuclear Magnetic resonance
2	FTIR	Fourier transform infrared
3	EIMS	Electron Impact Mass Spectrometry
4	MIC	Minimum inhibitory concentration
5	LOX	Lipoxygenase
6	IC_{50}	