

TABLE OF CONTENTS

Chapter	Caption	Page
	INTRODUCTION	
1.1	Cancer	1
1.2	Cancer: Facts and figures	3
1.3	Available treatment options for cancer	4
	EGFR AS TARGETED THERAPY	
2.1	Epidermal Growth Factor Receptor (EGFR)	7
2.2	Structure and downstream signaling of EGFR	7
2.3	EGFR over expression in various carcinomas	12
2.4	EGFR TK mutations and resistance	15
2.5	EGFR targeted therapies	17
2.6	Rationale for EGFR TK as target	34
2.7	Conclusion	34
	AIMS AND OBJECTIVES	
3.1	Need for newer anticancer agents	35
3.2	Objectives of the study	35
	SYNTHESIS AND CHARACTERIZATION	
4.1	4-(benzyloxy)phenyl](4-phenylpiperazin-1-yl)methanone derivatives	39
4.2	4-(3-(4-methylpiperazin-1-yl)propoxy)-N-phenylbenzamide (scaffold-II) and 4-(3-methoxyphenyl)piperazin-1-yl)(4-(3-(4-methylpiperazin-1-yl)propoxy)phenyl)methanone derivatives (scaffold-III)	44
4.3	4-(3-(4-ethylpiperazin-1-yl)propoxy)-N-phenylbenzamide (scaffold-IV) and 4-(3-(4-ethylpiperazin-1-yl)propoxy)phenyl)(4-	51

	(2-methoxyphenyl)piperazin-1-yl)methanone derivatives (scaffold-V)	
4.4	4-[3-(morpholin-4-yl)propoxy]-N-phenylbenzamide derivative (scaffold-VI) and (4-(2-methoxyphenyl)piperazin-1-yl)(4-(3- morpholinopropoxy)phenyl)methanone derivatives (scaffold- VII)	58
	CYTOTOXICITY STUDIES	
5.1	Cell growth inhibition/MTT assay	66
5.2	Principle	66
5.3	Protocol	66
5.4	Results and discussion	67
	DOCKING OF SYNTHESIZED COMPOUNDS	
6.1	Docking for EGFR interactions	74
6.2	Methodology	74
6.3	Selection and validation of 3D crystal structure of EGFR	76
6.4	Docking results and discussion	77
	IN VITRO EVALUATION	
7.1	<i>In vitro</i> screening of EGFR Inhibitors	95
7.2	ADP-Glo assay for Kinase activity	95
7.3	Results and discussion	97
	SUMMARY AND CONCLUSION	98
	FUTURE PERSPECTIVES	101
	REFERENCES	102