

CONTENTS

Chapter 1 Introduction		
1.1	General Introduction	1
1.2	<i>Sclerotium stipitatum</i> Berk. et. Curr.	5
1.3	Objectives	6
Chapter 2 Review of Literature		
2.1	Cancer	7
2.1.1	Causes	7
2.1.2	Physical agents	7
2.1.3	Chemical agents	8
2.1.4	Biological agents	9
2.1.5	Characteristics of cancer	9
2.2	Carcinogenesis	10
2.2.1	Initiation	10
2.2.2	Promotion	11
2.2.3	Progression	12
2.3	Cancer genes	12
2.3.1	Protooncogenes	12
2.3.2	Oncogenes	13
2.3.3	Anti-oncogenes or tumor suppressor genes	13
2.4	Oxidative stress	14
2.4.1	Free radicals	15
2.4.2	Oxygen radical	16
2.4.3	Nitrogen species	17
2.4.4	ROS in cancer	18
2.5	Antioxidants	20
2.5.1	Antioxidant enzymes	21
2.5.2	Antioxidant vitamins	23
2.5.3	Other non-enzymatic antioxidants	24
2.5.4	Lipid peroxidation	27
2.6	Inflammation and cancer	28
2.7	Cancer treatment	30
2.7.1	Cancer surgery	30
2.7.2	Radiation treatment	31
2.7.3	Nano based technologies	31
2.7.4	Chemotherapy	32
2.7.5	Anticancer drugs of natural origin	35
2.7.6	Mycosynthesis of nanoparticles	37
2.8	<i>Sclerotium stipitatum</i>	38

Chapter 3 Methodology

3.1	Fungal material	39
3.2	Molecular characterization	39
3.3	Preparation of fungal extracts	41
	3.3.1 Chemical analysis	42
	3.3.2 GC-MS analysis	46
	3.3.3 LC-MS analysis	46
3.4	In vitro cytotoxicity study	47
3.5	Animal experiments	48
	3.5.1 Toxicity study	48
	3.5.2 In vivo antitumor study	49
	3.5.2.1 DLA-induced solid tumor model	49
	3.5.2.2 EAC-induced ascites tumor model	50
	3.5.3 In vivo antioxidant study	51
	3.5.4 In vivo anti-inflammatory study	56
	3.5.4.1 Acute carrageenan-induced model	57
	3.5.4.2 Chronic formalin-induced model	57
	3.5.5 Statistical analysis	58
3.6	Mycosynthesis of silver nanoparticles	58
	3.6.1 UV-visible spectra analysis of silver nanoparticles	59
	3.6.2 SEM analysis of silver nanoparticles	59
	3.6.3 TEM analysis of silver nanoparticles	59
	3.6.4 XRD analysis of silver nanoparticles	60

Chapter 4 Results

4.1	Fungal material collection	61
4.2	Molecular characterization	61
4.3	Preparation of fungal extracts	64
	4.3.1 Chemical analysis	64
	4.3.2 GC-MS analysis	66
	4.3.3 LC-MS analysis	67
4.4	In vitro cytotoxicity study	72
4.5	Animal experiments	73
	4.5.1 Toxicity study	73
	4.5.2 In vivo antitumor study	73
	4.5.2.1 DLA-induced solid tumor model	73
	4.5.2.2 EAC-induced ascites tumor model	77
	4.5.3 In vivo antioxidant study	80
	4.5.4 In vivo anti-inflammatory study	82
	4.5.4.1 Acute carrageenan-induced model	82
	4.5.4.2 Chronic formalin-induced model	83

4.6	Mycosynthesis of silver nanoparticles	84
4.6.1	UV-visible spectra analysis of silver nanoparticles	85
4.6.2	SEM analysis of silver nanoparticles	86
4.6.3	TEM analysis of silver nanoparticles	88
4.6.4.	XRD analysis of silver nanoparticles	89

Chapter 5 Discussion

5.1	Fungal material collection	90
5.2	Molecular characterization	90
5.3	Preparation of fungal extracts	91
5.3.1	Chemical analysis	92
5.3.2	GC-MS analysis	93
5.3.3	LC-MS analysis	94
5.4	In vitro cytotoxicity study	95
5.5	Animal experiments	96
5.5.1	Toxicity study	96
5.5.2	In vivo antitumor study	97
5.5.2.1	DLA-induced solid tumor model	97
5.5.2.2	EAC-induced ascites tumor model	98
5.5.3	In vivo antioxidant study	99
5.5.4	In vivo anti-inflammatory study	100
5.5.4.1	Acute carrageenan-induced model	100
5.5.4.2	Chronic formalin-induced model	100
5.6	Mycosynthesis of silver nanoparticles	101
5.6.1	UV-visible spectra analysis of silver nanoparticles	102
5.6.2	SEM analysis of silver nanoparticles	102
5.6.3	TEM analysis of silver nanoparticles	103
5.6.4.	XRD analysis of silver nanoparticles	103

Chapter 6 Summary and Conclusion 104-107

References 108-123

Annexure

1. Ethical Committee Clearance Certificate
2. Patent filed receipt
3. Herbarium accession report
4. Publication
5. Paper Presentations