



Contents

CONTENTS

CHAPTER No.	TITLE	PAGE No.
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF PLATES	
1	INTRODUCTION	1
2	REVIEW OF LITERATURE	6
3	METHODOLOGY	32
4	RESULTS	88
5	DISCUSSION	153
6	SUMMARY AND CONCLUSION	204
	BIBLIOGRAPHY	

LIST OF TABLES

TABLE No.	TITLE	PAGE No.
1	Enzymic antioxidant activities in <i>Artemisia vulgaris</i> leaves	89
2	Non-enzymic antioxidant levels in <i>Artemisia vulgaris</i> leaves	90
3	Effect of <i>Artemisia vulgaris</i> leaf extracts on superoxide dismutase activity in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	102
4	Effect of <i>Artemisia vulgaris</i> leaf extracts on catalase activity in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	102
5	Effect of <i>Artemisia vulgaris</i> leaf extracts on peroxidase activity in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	103
6	Effect of <i>Artemisia vulgaris</i> leaf extracts on glutathione reductase activity in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	104
7	Effect of <i>Artemisia vulgaris</i> leaf extracts on glutathione S-transferase activity in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	105
8	Effect of <i>Artemisia vulgaris</i> leaf extracts on vitamin C levels in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	106
9	Effect of <i>Artemisia vulgaris</i> leaf extracts on vitamin E levels in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	107
10	Effect of <i>Artemisia vulgaris</i> leaf extracts on vitamin A levels in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	108
11	Effect of <i>Artemisia vulgaris</i> leaf extracts on reduced glutathione levels in goat liver slices exposed to H ₂ O ₂ <i>in vitro</i>	109
12	Effect of <i>Artemisia vulgaris</i> leaf extracts on the morphological changes in <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress (giemsa staining)	114

Contd...

TABLE No.	TITLE	PAGE No.
13	Effect of <i>Artemisia vulgaris</i> leaf extracts on the morphological changes in chick embryo fibroblasts subjected to oxidative stress (giemsa staining)	115
14	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress (PI staining)	116
15	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in chick embryo fibroblasts subjected to oxidative stress (PI staining)	119
16	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress (EtBr staining)	120
17	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in chick embryo fibroblasts subjected to oxidative stress (EtBr staining)	122
18	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress (DAPI staining)	124
19	Effect of <i>Artemisia vulgaris</i> leaf extracts on nuclear changes in chick embryo fibroblasts subjected to oxidative stress (DAPI staining)	124
20	Effect of <i>Artemisia vulgaris</i> leaf extracts on primary chick embryo fibroblasts subjected to apoptosis by etoposide (giemsa staining)	130
21	Effect of <i>Artemisia vulgaris</i> leaf extracts on Hep2 cells subjected to apoptosis by etoposide (giemsa staining)	130
22	Effect of <i>Artemisia vulgaris</i> leaf extracts on chick embryo fibroblasts subjected to apoptosis by etoposide (PI staining)	133
23	Effect of <i>Artemisia vulgaris</i> leaf extracts on Hep2 cells subjected to apoptosis by etoposide (PI staining)	133

Contd...

TABLE No.	TITLE	PAGE No.
24	Effect of <i>Artemisia vulgaris</i> leaf extracts on chick embryo fibroblasts subjected to apoptosis by etoposide (EtBr staining)	134
25	Effect of <i>Artemisia vulgaris</i> leaf extracts on Hep2 cells subjected to apoptosis by etoposide (EtBr staining)	136
26	Effect of <i>Artemisia vulgaris</i> leaf extracts on chick embryo fibroblasts subjected to apoptosis by etoposide (DAPI staining)	138
27	Effect of <i>Artemisia vulgaris</i> leaf extracts on Hep2 cells subjected to apoptosis by etoposide (DAPI staining)	140
28	Preliminary phytochemical test	141
29	Peak table for the alkaloids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	143
30	Peak table for the phenolics in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	144
31	Peak table for the flavonoids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	145
32	Peak table for the sesquiterpenoids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	146
33	Peak table of the methanolic extract of <i>Artemisia vulgaris</i> leaves subjected to HPLC	147

LIST OF FIGURES

FIGURE No.	TITLE	PAGE No.
1	DPPH and ABTS radical scavenging effects of <i>Artemisia vulgaris</i> leaf extracts	93
2	Superoxide and nitric oxide scavenging effects of <i>Artemisia vulgaris</i> leaf extracts	93
3	Hydroxyl radical scavenging effect of <i>Artemisia vulgaris</i> leaf extracts	96
4	Hydrogen peroxide scavenging effect of <i>Artemisia vulgaris</i> leaf extracts	96
5	Inhibition of lipid peroxidation in different membrane preparations by <i>Artemisia vulgaris</i> leaf extracts	100
6	Inhibition of oxidant-induced damage to herring sperm DNA by <i>Artemisia vulgaris</i> leaf extracts	100
7	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress as determined by MTT assay	112
8	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of chick embryo fibroblasts subjected to oxidative stress as determined by MTT assay	112
9	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of <i>Saccharomyces cerevisiae</i> cells subjected to oxidative stress as determined by SRB assay	113
10	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of chick embryo fibroblasts subjected to oxidative stress as determined by SRB assay	113
11	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of chick embryo fibroblasts subjected to oxidative stress as determined by MTT assay	127

Contd...

FIGURE No.	TITLE	PAGE No.
12	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of Hep2 cells subjected to oxidative stress as determined by MTT assay	127
13	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of chick embryo fibroblasts subjected to oxidative stress as determined by SRB assay	129
14	Effect of <i>Artemisia vulgaris</i> leaf extracts on the viability of Hep2 cells subjected to oxidative stress as determined by SRB assay	129
15	UV absorption spectrum of the methanolic extract of <i>Artemisia vulgaris</i> leaves	141
16	Peak densitogram of alkaloids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	143
17	Peak densitogram of phenolics in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	144
18	Peak densitogram of flavonoids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	145
19	Peak densitogram of sesquiterpenoids in the methanolic extract of <i>Artemisia vulgaris</i> leaves by HPTLC	146
20	HPLC profile of the methanolic extract of <i>Artemisia vulgaris</i> leaves	148
21	IR spectrum of the methanolic extract of <i>Artemisia vulgaris</i> leaves	148
22	GC-MS profile of the methanolic extract of <i>Artemisia vulgaris</i> leaves	150
23	Peak fragmentation of GC-MS spectrum (9.244)	150
24	Peak fragmentation of GC-MS spectrum (10.174)	150
25	Peak fragmentation of GC-MS spectrum (11.487)	151
26	Peak fragmentation of GC-MS spectrum (13.388)	151
27	Peak fragmentation of GC-MS spectrum (13.568)	151

LIST OF PLATES

PLATE No.	TITLE	PAGE No.
1	<i>Artemisia vulgaris</i> leaves	92
2	DPPH dot blot assay	92
3	Migration patterns of pUC18 and λ DNA treated with H ₂ O ₂ with and without the leaf extracts	99
4	<i>Saccharomyces cerevisiae</i> cells stained with giemsa (oxidant – H ₂ O ₂)	117
5	Primary chick embryo fibroblasts stained with giemsa (oxidant – H ₂ O ₂)	117
6	<i>Saccharomyces cerevisiae</i> cells stained with PI (oxidant – H ₂ O ₂)	118
7	Primary chick embryo fibroblasts stained with PI (oxidant – H ₂ O ₂)	118
8	<i>Saccharomyces cerevisiae</i> cells stained with EtBr (oxidant – H ₂ O ₂)	121
9	Primary chick embryo fibroblasts stained with EtBr (oxidant – H ₂ O ₂)	121
10	<i>Saccharomyces cerevisiae</i> cells stained with DAPI (oxidant – H ₂ O ₂)	123
11	Primary chick embryo fibroblasts stained with DAPI (oxidant – H ₂ O ₂)	123
12	Primary chick embryo fibroblasts	126
13	Hep2 cells	126
14	Primary chick embryo fibroblasts stained with giemsa (oxidant – etoposide)	132
15	Hep2 cells stained with giemsa (oxidant – etoposide)	132
16	Primary chick embryo fibroblasts stained with PI (oxidant – etoposide)	135

Contd ...

PLATE No.	TITLE	PAGE No.
17	Hep2 cells stained with PI (oxidant – etoposide)	135
18	Primary chick embryo fibroblasts stained with EtBr (oxidant – etoposide)	137
19	Hep2 cells stained with EtBr (oxidant – etoposide)	137
20	Primary chick embryo fibroblasts stained with DAPI (oxidant – etoposide)	139
21	Hep2 cells stained with DAPI (oxidant – etoposide)	139
22	Chromatogram of alkaloids	143
23	Chromatogram of phenolics	144
24	Chromatogram of flavonoids	145
25	Chromatogram of sesquiterpenoids	146