

## Contents

	Page
Introduction and Aim of work.....	1
Review of Literature.....	4
1) Mycotoxins.....	4
2) Definitions and Health Effects.....	4
3) Aflatoxins.....	5
a) Chemical and physical properties of aflatoxins.....	5
b) Biosynthesis of aflatoxins.....	7
c) Toxicological effects of aflatoxins in animals and man.....	9
d) Mechanism of toxicity of aflatoxins.....	9
e) Factors influencing aflatoxin biosynthesis.....	10
f) Effects and associated exposures.....	11
4) Prevention of mould growth.....	13
a) Potential use of natural products as antifungal and antimycotoxigenic...	13
Materials and Methods.....	21
5) Plant materials.....	21
6) Isolation of the essential oil.....	21
7) Preparation of the ethanol extract.....	21
8) Analysis of the volatile oils.....	21
a) Gas chromatography.....	21
b) Gas chromatography- mass spectrometry (GC-MS).....	22
9) Evaluation of antioxidant activity.....	22
a) $\beta$ -carotene–linoleic acid bleaching assay.....	22
b) DPPH free radical scavenging assay.....	23
10) Cultures.....	23
11) Media used for cultivation of fungi.....	24
12) Antifungal and antitoxogenic activity.....	24
13) Production of Aflatoxins.....	24
14) Preparation of contaminated diet.....	24
15) Detection and Determination of Aflatoxins.....	24
a) Preparation of working solution of Aflatoxins.....	24
b) Determination of Aflatoxins.....	25
c) Extraction method.....	25
d) Detection of aflatoxin by TLC.....	25
e) Determination of Aflatoxins by HPLC technique.....	25
f) Derivatization.....	25
16) Determination of physiological and biochemical effects of parsley and rocket extracts on aflatoxin treated rats.....	26
a) Experimental protocol.....	26
b) Blood and liver Sampling.....	27
c) Determination of some hematological parameters.....	27
d) Biochemical analysis.....	27
17) Statistical analysis.....	29
Results.....	30
18) Plant extraction and identification of the chemical composition of the	30

essential oils of the plants.....	
a) Solvent extraction (ethanol) .....	30
b) Steam distillation.....	30
19) Chemical composition of the essential oils	30
a) Chemical composition of the essential oil of Parsley.....	30
b) Chemical composition of the essential oil of Ginger.....	31
c) Chemical composition of the essential oil of Turmeric.....	32
d) Chemical composition of the essential oil of Rocket.....	34
20) Antifungal and anti-aflatoxigenic effects.....	35
a) The effect of parsley essential oil and ethanolic extract on <i>A. flavus</i> .....	35
b) The effect of ethanolic extract of parsley on inhibition of aflatoxins.....	35
c) Antifungal effect of the essential oil and ethanolic extract of rocket.....	41
d) The effect of ethanolic extract of rocket on inhibition of aflatoxin.....	41
e) Antifungal effect of the essential oil and ethanolic extract of turmeric.....	47
f) The effect of ethanolic extract of turmeric on inhibition of aflatoxin.....	47
g) Antifungal effect of the essential oil and ethanolic extract of ginger.....	53
h) The effect of ethanolic extract of ginger on inhibition of aflatoxin.....	53
21) The antioxidant effect of the essential oil and ethanolic extract of the tested plants:	59
a) DPPH Scavenging inhibition of essential oils.....	59
b) DPPH scavenging inhibition of ethanol extracts.....	59
c) The bleaching activity of parsley using $\beta$ - Carotene/linoleic acid assay.....	61
d) The bleaching activity of rocket using $\beta$ - Carotene/linoleic acid assay.....	61
e) The bleaching activity of turmeric using $\beta$ - Carotene/linoleic acid assay.....	61
f) The bleaching activity of ginger using $\beta$ - Carotene/linoleic acid assay.....	61
22) Physiological and biochemical effects of parsley and rocket extracts on aflatoxin treated rats	66
a) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on some blood parameters of male albino rats receiving aflatoxin contaminated diet.....	66
b) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on liver enzymes of male albino rats receiving aflatoxin contaminated diet	66
c) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on Lipid Profile of male albino rats receiving aflatoxin contaminated diet	71
d) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on serum alkaline phosphatase (ALP) and albumin in albino rat	71
e) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on Kidney Function of male albino rats receiving aflatoxin contaminated	76

diet.....	
f) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extract on serum $\alpha$ fetoprotein and carcinoembryonic antigen of male albino rats receiving aflatoxin contaminated diet	76
g) Effect of parsley (40 mg/kg) or rocket (50 mg/kg) extracts on antioxidant parameters of male albino rats receiving aflatoxin contaminated diet.....	81
Discussion.....	84
References.....	95
Summary .....	120

الملخص العربي