



Quality control of certain herbal products used for respiratory disorders

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LIST OF CONTENT

	Title	Page
	LIST OF FIGURES	V
	LIST OF TABLES	Viii
	LIST OF ABBREVIATION	X
	Introduction	1
	Review of Literature	5
1	Fennel fruits	5
2	Guava leaves	7
3	Thyme leaves	9
4	Liquorice roots	11
5	Anise fruits	13
6	Salvia leaves	15
7	Melissa leaves	17
8	Tilia leaves	19
9	Peppermint leaves	21
10	Verbascum flowers	23
11	Marjoram leaves	25
12	Honey	27
13	Primula flowers	29

14	Grindelia flowers	31
15	Flora rose	33
	Material, Apparatus and Methods	35
1	Material	35
1.1	Pharmaceutical preparations	35
1.2	Authentic reference materials	37
2	Apparatus	38
2.1	Light microscope with the camera	38
2.2	Gas Chromatography	38
2.3	Atomic absorption spectrometer	38
2.4	High Performance Liquid Chromatography	38
2.5	Hydrodistillation apparatus (Clevenger apparatus)	38
2.6	Gas Chromatography/Mass Spectrometry	38
3	Methods and procedures	39
3.1	Microscopical examination of pharmaceutical preparations	39
3.2	Determination of pesticide residues	39
3.3	Determination of heavy metals	40
3.4	Determination of microbial contaminants	40
3.5	Determination of aflatoxins	41
3.6	Determination of total ash	41

3.7	Determination of acid insoluble ash	42
3.8	Determination of water soluble ash	42
3.9	GC/MS analysis of volatile oils of pharmaceutical preparations	42
Chapter I	Microscopical Examination of pharmaceutical preparations	44
1	Microscopical examination of pharmaceutical preparations (Sekem Cough and Flu)	44
2	Conclusion	55
Chapter II	Determination of chemical, microbial contaminants and certain pharmacopeial constants	57
1	Determination of chemical contaminants	57
1.1	Determination of pesticide residues	57
1.2	Determination of certain microelements and heavy metals	65
2	Determination of microbial contaminants	69
2.1	Determination of aflatoxins	74
3	Determination of certain Pharmacopoeial constants	80
4	Conclusion	82
Chapter III	GC/MS analysis of essential oils of different pharmaceutical preparations	84
1	Analysis of essential oils of Sekem Cough	85
2	Analysis of essential oils of Sekem Flu	88
3	Analysis of essential oils of Alveolin –P Syrup	91
4	Analysis of essential oils of Balsam syrup	93
5	Conclusion	95

	Summary	96
	References	101
	Arabic summary	-

LIST OF FIGURES

Figure	Title	Page
1	<i>Foeniculum vulgare</i> herb and seeds	5
2	Chemical structure of main constituents of fennel fruits	6
3	<i>Psidium guajava L.</i> herb and fruits	7
4	Chemical structure of main constituents of guava leaves	8
5	<i>Thymus vulgaris</i> herb and seeds	9
6	Chemical structure of main constituents of thyme leaves	10
7	<i>Glycyrrhiza glabra</i> herb and roots	11
8	Chemical structure of main constituents of liquorice roots	12
9	<i>Pimpinella anisum L.</i> herb and seeds	13
10	Chemical structure of main constituents of anise fruits	14
11	<i>Salvia officinalis</i> herb and leaves	15
12	Chemical structure of main constituents of salvia leaves	16
13	<i>Melissa officinalis</i> leaves and seeds	17
14	Chemical structure of main constituents of melissa leaves	18
15	<i>Tilia cordata</i> leaves and seeds	19
16	Chemical structure of main constituents of tilia leaves	20
17	<i>Mentha piperita L.</i> leaves and dried mint leaf powder	21
18	Chemical structure of main constituents of peppermint leaves	22

19	<i>Verbascum thapsus</i> L. herb and flowers	23
20	Chemical structure of main constituents of verbascum flowers	24
21	<i>Origanum marjorana</i> leaves and dried fruits	25
22	Chemical structure of main constituents of marjoram leaves	26
23	Honey	27
24	Chemical structure of main constituents of honey	28
25	<i>Primula vulgaris</i> herb and flowers	29
26	Chemical structure of main constituents of primula flowers	30
27	<i>Grindelia squarrosa</i> herb and flowers	31
28	Chemical structure of main constituents of grindelia flowers	32
29	<i>Rosa Multiflora</i> herb and flowers	33
30	Chemical structure of main constituents of flora rose	34
31	Microscopial examination of powdered fruit of <i>Pimpinella anisum</i>	45
32	Microscopial examination of powdered fruit of <i>Foeniculum vulgare</i>	46
33	Microscopial examination of powdered root of <i>Glycyrrhiza glabra</i> L.	48
34	Microscopial examination of powdered leaves of <i>Organium marjorana</i>	49
35	Microscopial examination of powdered flowers of <i>Verbascum thapsus</i>	50
36	Microscopial examination of powdered leaves of <i>Salvia officinalis</i>	51
37	Microscopial examination of powdered leaves of <i>Thymus vulgaris</i>	52
38	Microscopial examination of powdered leaves of <i>Melissa officinalis</i>	53

39	Microscopial examination of powdered leaves of <i>Mentha piperita L.</i>	54
40	GC chromatogram of solvent used in determination of pesticide residue	62
41	GC chromatogram of thirteen pesticide standards	62
42	GC chromatogram of pesticide residue in Sekem Cough	63
43	GC chromatogram of pesticide residue in Sekem Flu	63
44	G, B serieses of aflatoxins	75
45	Aflatoxin disease pathways in humans	76
46	HPLC chromatogram of standard aflatoxins G1, B1, G2 and B2	77
47	HPLC chromatogram of aflatoxins in Sekem Cough	78
48	HPLC chromatogram of aflatoxins in Sekem Flu	78
49	GC/MS chromatogram of essential oil of Sekem Cough	85
50	GC/MS chromatogram of essential oil of Sekem Flu	88
51	GC/MS chromatogram of essential oil of Alveolin –P syrup	91
52	GC/MS chromatogram of essential oil of Balsam syrup	93

LIST OF TABLES

Table	Title	Page
1	Pharmaceutical preparations in the Egyptian market	35
2	Composition of Sekem Cough herb	36
3	Composition of Sekem Flu herb	36
4	Composition of Balsam syrup	36
5	Composition of Alveolin –P syrup	36
6	Classification of major contaminants and residues in herbal medicines	59
7	National limits set for pesticide residues	60
8	MRLs set for various pesticide residues in European pesticide's database	61
9	Results of 13 pesticide residues in pharmaceutical preparations (Sekem Cough and Flu)	64
10	pesticide residues in pharmaceutical preparations (Sekem Cough and Flu)	64
11	Daily intake of pesticide residues for Sekem Cough	65
12	Daily intake of pesticide residues for Sekem Flu	65
13	List of some contaminants and their toxicological effects	66
14	National limits for toxic metals in herbal medicines	67
15	Concentrations of certain microelements and heavy metals in pharmaceutical preparations (Sekem Cough and Flu)	68
16	Daily intake of heavy metals and microelements for Sekem Cough	69
17	Daily intake of heavy metals and microelements for Sekem Flu	69

18	Microbial contents of different batches of Sekem Cough	70
19	Microbial contents of different batches of Sekem Flu	71
20	Concentrations ($\mu\text{g}/\text{kg}$) of aflatoxins for Sekem Cough	79
21	Concentrations ($\mu\text{g}/\text{kg}$) of aflatoxins for Sekem Flu	79
22	Certain Pharmacopoeial constants of different herbs in Sekem Cough and Flu	80
23	Pharmacopoeial constants reported in the Egyptian Pharmacopoeia	81
24	Characters ,yield %,total number of identified compounds and % of identified compounds of pharmaceutical preparations	84
25	Main volatile constituents identified in the essential oil of Sekem Cough via GC/MS	86
26	Main volatile constituents identified in the essential oil of Sekem Flu via GC/MS	89
27	Main volatile constituents identified in the essential oil of Alveolin –P via GC/MS	92
28	Main volatile constituents identified in the essential oil of Balsam syrup via GC/MS	93

LIST OF ABBREVIATIONS

- µg: microgram
- µl: microliter
- 2, 4-D: Dichlorophenoxyacetic acid
- 2,4,5-T: 2,4,5- trichloro phenoxy acetic
- a NIST: a National Institute of Standards and Technology
- AOAC: Association of Official Agricultural Chemists
- APC: Agricultural Pesticide Committee
- BHC: Benzene Hexachloride
- CC: Column Chromatography
- cfu/gm: colony forming units per gram
- DDD: Dichlorodiphenyldichloroethane.
- DDE : Dichlorodiphenyldichloroethylene
- DDT: dichlorodiphenyltrichloroethane
- ECD: Electron Capture Detector
- EP: European Pharmacopoeia
- EPA: Environmental Protection Agency
- FA: Farmacopea Argentina
- FAO: Food and Agriculture
- FID: Aflame Ionization Detector
- GACP: Good Agricultural and Collection Practices
- GC/MS: Gas Chromatography/Mass Spectrometry
- GMP: Good Manufacturing Practices
- GPC: Gel permeation chromatography
- GRIN: The Germplasm Resources Information Network
- HDL: High-density Lipoprotein Cholesterol
- HP: Hewlett Packard
- HPLC : High Performance Liquid Chromatography
- HSCAS : Hydrated Sodium Calcium Aluminosilicate

- LDL: Low Density Lipoprotein Cholesterol
- LOQ: Limit Of Quantitation
- MALDI-TOF: matrix-assisted laser desorption/ionization- time-of-flight mass spectrometer.
- MPL: Maximum Permissible Limits
- NPIC :national pesticide information center
- p, p' TDE;1,1-Dichloro-2,2-bis (parachlorophenyl)ethane
- POPs : Persistent organic pollutants
- PSD : power spectral density
- RI : retention index
- ROS:Reactive Oxygen Species
- TFA: trifluoroacetic acid:
- The U.S. FDA : United States Food and Drug administration
- TMP: Total Magnification Power
- USDA: United States Department of Agriculture.
- USP: United States pharmacopeia.
- UV: Ultraviolet
- WHA: World Health Assembly
- WHO: World Health Organization
- λ_{\max} : Wave length of maximum absorbance

INTRODUCTION

Medicinal plants constitute a source of raw materials for both traditional systems of medicine (e.g. Ayurvedic, Chinese, Unani, Homeopathy, and Siddha) and modern medicine. Nowadays, plant materials are employed throughout the industrialized and developing world as home remedies, over-the-counter drugs, and ingredients for the pharmaceutical industry. As such, they represent a substantial proportion of the global drug market. Most rural populations, especially in the developing world, depend on medicinal herbs as their main source of primary health care. Although most medicinal herbs are not, in their natural state, fit for administration, preparations suitable for administration are made according to pharmacopeia directions. The therapeutic potential of herbal drugs depends on its form: whether parts of a plant, or simple extracts, or isolated active constituents. Herbal remedies consist of portions of plants or unpurified plant extracts containing several constituents, which often work together synergistically.

The herbal drug preparation in its entirety is regarded as the active substance and the constituents are either of known therapeutic activity or are chemically defined substances or group of substances generally accepted to contribute substantially to the therapeutic activity of the drug. Phytochemical screening involves botanical identification, extraction with suitable solvents, purification, and characterization of the active constituents of pharmaceutical importance. Qualitative chemical examination employing different analytical techniques is conducted to detect and isolate the active constituent(s). In general, all medicines, whether they are synthetic or of plant origin, should fulfill the basic requirements of being efficacious and safe. Ultimate proof of these can only be achieved by some form of clinical research. A defined and constant composition of the drug is therefore one of the most important prerequisites for any kind of clinical experiment.

Quality control for the efficacy and safety of herbal products is essential. The quality control of phytopharmaceuticals may be defined as the status of a drug, which is determined either by identity, purity, content, and other chemical, physical or biological properties, or by the manufacturing process. Compared with synthetic drugs, the criteria and the approach for herbal drugs are much more complex.