

*N. Jaradat, J. Al-Aqsa Univ., 9, 2005*

**Medical Plants Utilized in Palestinian Folk Medicine for  
Treatment of Diabetes Mellitus and Cardiac diseases**

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**ABSTRACT**

Traditional remedies are part of the cultured and religious life in Palestine. In this project, herbal products used in folk medicine were investigated and recorded. A total of one hundred and eighty four different plant species were in use. Among these medicinal plants twenty one were used for their hypoglycemic effects, eleven were used for their hypotensive effects and forty were used for their diuretic effects. Reservation of endangered medicinal plant species as well as clinical investigation of these plants is required.

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## **INTRODUCTION:**

Throughout history, man used various natural materials as a remedy for various diseases. In the past few decades, most natural products were replaced with synthetic drugs that were based on modern chemistry and biotechnology. However, we are recently witnessing a vastly growing and renewed interest in natural medicines in western countries. In particular, the herbal medicine market has exploded and became prosperous in pharmacies and many stores. For example, there was a seven-fold increase in the number of people using herbal medicines between 1990 and 1997 in U.S.A(1). With this increasing interest in natural medicine, more individuals will explore the possibility of using natural medicines to complement conventional therapy, as is already the case in certain minority cultures (2, 3). Furthermore, natural products are still a major source of new drug discoveries: for example, 65% of the drugs that were approved for marketing between the years 1983 and 1994 were based on natural sources(4,5). Ethnopharmacological research is considered crucial in the development and discovery of new drugs from natural sources (6, 7). In Palestine, there are numerous medicinal plants described for treatment of many diseases. Herbal medicine is considered an integral part of the Palestinian culture and plays a pivotal and indispensable role in the current public healthcare. The hills and mountains of Palestine are covered with more than 2600 plant species of which more than 700 are noted for their uses as medicinal herbs or as botanical pesticides (8). An extensive ethnobotanical study was previously carried out in West-Bank/Palestine to evaluate the relative efficacy of medicinal plants for the treatment of skin and prostate disorders (9). Another recent ethnopharmacological survey study was conducted in some parts of Palestine among the most well known Arabic indigenous herbal practitioners in order to evaluate the potential of local plants used in treating different diseases and illnesses (10). The study showed that one hundred and twenty nine plant species are still in use in Arabic traditional medicine: forty plant species for skin diseases; twenty seven species for treating kidney and urinary tract; twenty one species for treating diabetes; twenty three species for treating digestive system diseases; twenty two species for treating liver diseases; sixteen species for treating respiratory and coughing; thirteen species for cancer and nine species for treating weight loss and cholesterol reduction (10). Other similar studies were carried out in Morocco and found that eighty percent of patients suffering from diabetes mellitus or cardiac diseases use medicinal

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plants because they believe that they are cheaper, more efficient and better than modern medicine (11).

The purpose of this study is to carry an ethnopharmacological survey on natural products (medical plants) that are used in healing diseases in general and those used for diabetes mellitus and hypertension in particular.

#### **METHODOLOGY AND RESULTS:**

The survey was carried out by a group of pharmacy students (9 students) from An-Najah National University. The survey started on January 2003 and ended on August 2003. The survey included all major regions in West Bank (5900 Km<sup>2</sup>) of historic Palestine: Jenin, Tulkarm, Qalqilia, Nablus, Salfit, Ramallah, East Jerusalem, Bethlehem and Hebron as seen in the map (Figure 1). The survey included visits to a total of thirty herbalists, herbal shops and people who are involved in traditional Arabic medicine in major cities in Palestine. In each visit, the students took and wrote down the information in a special format sheet (appendix 1). The format sheet included address, years of experience and education of the herbalist. The format sheet also included questions regarding most commonly used natural products in general and those used for diabetes mellitus or cardiac diseases in specific. The information collected included any herbal or animal or inorganic material used for therapy in traditional medicine. For each natural product, all therapeutic uses, the active part from which the product was prepared (e.g. seeds, leaves, roots, etc) as well as the source (imported versus local) from which the natural product was obtained is recorded. The data collected is shown below where table number one contains the plant species used in folk medicine. In this research, 30 herbalists from the several cities in the West Bank- Palestine participated in the research. The response of the herbalists to the questions cited in the format (appendix 1) is shown below were 19/30 of the herbalists mentioned the anti-diabetic plants, 22/30 mentioned the antihypertensive drugs, 20/30 mentioned the cardiac drugs and 27/30 mentioned the diuretic drugs cited in table(1).



**Figure 1:** The right side of the map represents West – Bank of historic Palestine where the survey took place.

**Table 1: Traditional uses of the folk medicinal plants in Palestine.**

Latin name	Common name	Used part	Source	Uses
Absinthium officinalis	Worm wood	Flowers	Local	Appetizer, Get rid of worm and to stop smoking habit.
Acacia catechu	Khair tree Catechu tree	Bark	<u>Local</u>	Hemorrhoids, Antidiarrhea.
Achillea fragrantissima	Lavender cotton Qaysun	Small leaves	Local	Carminative.
Achillea millefolium	Milfoil	Leaves	<u>Imported</u>	Anti-septic , Astringent, Diuretic ,Carminative.
		Seeds		Stop bleeding
Achillea santolina	Santolina	Entire herb	Unknown	Stomachic, Carminative, Anathematic, Expectorant.
Acorus calamus	Sweet flag	Branches	Imported	For flatulence.
Aegle marmelos	Beal	Fruits	Local	Acne, Wounds, Anti-diarrhea.
Alhagi mannifera	Camels thorn	Roots	Local	For kidney pebbles and sands.
Allium cepa	Onion	Leaves	Local	Colds, Virility enhancement.
		Seeds		Colds, Virility enhancement.
		Oil		Lowers sugar & cholesterol levels.
		Bulbs		Hypoglycemic, Anti-hyper lipidemic, Stomachic, Bacteriostatic, Anthelmintic, Rubefacient, Anti-inflammatory, Antiseptic ,To get rid of rotten or decay , in the GIT stimulate the action of liver ,Pancreas & bile. For pulmonary infection, For urinary retention, Abscesses, Cough & aphrodisiac.
		Juice		Ear infection.
		Oil		Demulcent, Mouth ulcers.

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Allium porrum	Leek	Entire plant	<u>Local</u>	Food, Lactogenic, Tonic, Diuretic, For heart diseases. Epilepsy, Constipation, Arthritis, Urinary tract, Anti- infections.
Allium sativum	Garlic	Seeds	Local	Stomach soothing, Anti-emetic.
		Oil		Strengthens heart, Lowers cholesterol.
		Bulbs & lobe		Antiasthmatic, Hypotensive Expectorant, Respiratory inflammation , Carminative, Antiseptic, Treat arteriosclerosis, Toothache, Analgesic, Treatment of hyperlipidemia, Relief rheumatism pains, Treatment of cracks at corners of mouth ,Anti-cancer, Diuretic, Decongestant , Antigout, Stones in kidney,Treatment of typhoid.
		Seeds		Heart problems, Flatulence.
Aloe barbadenses	Aloes	Leaves	<u>Local</u>	Skin nflammation, Stimulate stomach, Causes diarrhea.
Aloe vera	Aloe	Juice	Local	Skin diseases, Wounds, Purgative, Acne, Peptic ulcer, Anti-diabetic.
		Leaves		Treat burns, Wound healing, Cathartic.
		Gum		Laxative, Anti-diabetic, Used in peptic ulcer.
Althea officinalis	Marshmallow	Flowers	Local	Cough, (magnetizer), Toothache.
Anastatica hierochuntica	Rose of Jericho	Plant	Local	Disinfectant, Easing childbirth.
Anchus officinalis	Bugloss	Fruits	<u>Local</u>	Treatment of hypertension.
Angelica archangelica	Angelica	Roots, fruits, seeds	<u>Imported</u>	Stomachic, Tonic, Carminative, Antispasmodic, Activate Kidney, Anti-emetic, Antipyretic, Antiseptic.
Anona squamosa	Custard Apple	Seeds	Imported	General healing.

Anthemis pyrethrum	Pellitory	Wood	Imported	Activator.
Antriplex hortensis	Spinach	Entire plant	Local	Vitamins deficiency, Soothing inflammation, Seeds used as emetic.
Apium graveolens	Celery	Whole plant	Local	Antispasmodic, Carminative, Diuretic, Aphrodisiac.
Arctium lappa	Burdock	leaves	<u>Imported</u>	Anti diarrhea, Antiseptic.
		Roots		Anti-diabetic, Treatment of skin diseases.
<u>Armoracia lopathifolia</u>	Horse radish	Seeds Roots	<u>Imported</u>	Carminative, Stomachic, Lactogenic, Treatment of kidney stones.
Artemisia abrotanum	Southern wood	Leaves and branches	Local	For asthma, Diuretic.
Artemisia absinthium	Absinthe	Dried herb	Unknown	Diuretic, Stomach pains, Tonic, Antipyretic, Stimulant, Stomachic, Motion sickness, Anthelmintic, Antiseptic.
Artemisia herba alba	Worm	Entire plant except the root	<u>Imported</u>	Anti -diabetic, Carminative, Stomach tonic.
Astragalus gummifera	Tragacanth	Gums	Imported	Protection of the kidney.
Avena sativa Avena barbata	Oats	Seeds	Imported	Cure smoking habit, Anti-diabetic, Dyspepsia, Treatment of constipation, Hyperlipidemia
Barbarea vulgaris	Rocket	Leaves	<u>Imported</u>	Laxative, Diuretic, Kidney stones.
Brassica alba	White mustard, Salad mustard	Seeds	<u>Imported</u>	Gout, Bronchitis , Dispnea, Rubefacient.
Brassica napus	Colza	Seeds	<u>Unknown</u>	Emollient ,Purgative , Bronchodilator , Wound healing.
Brassica nigra	Black Mustard	Seeds	Imported	Emetic, Expectorant, Laxative, Local Counter irritant, Anti-cancer, Rubefacient, Stomachic, Relief of rheumatism pains.
Brassica oleracea	Capitates Cabbage	Leaves	Local	Fresh leaves extract good for gastro duodenal ulcers, Sedative to bronchospasm.

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		Seeds		Extract proved antibiotic & fungicidal activity.
Brassica sperata	Turnip	Roots	<u>Local</u>	Anti-microbial.
Camellia sinensis	Tea	Leaves	Imported	Bronchodilator, CNS stimulant, Diuretic, Anti-diarrhea (dry leaves), Green Tea has anti cancer activity, Treatment of inflamed eyes.
Capsella bursapastori	Mothers heart	Entire plant	<u>Imported</u>	For kidney stone.
Capsicum annum	Red pepper	Fruits	Local	Rubefacient for arthritis, Stomachic, Carminative, Condiment, Counter irritant, Relief of Rheumatism.
Capsicum fructus	Sweet Pepper	Fruits	Local	Stomach reinforcing, Aphrodisiac.
Carthamus tinctorius	Safflower	Seeds	Local	For cough and liver diseases.
Cassia absus	Chicin	Seeds	Imported	For eye diseases.
Cassia acutifolia	Senna	Leaves	Imported	Purgative & for weight reduction.
Cephaelis Ipecacuanha	Ipecac	Roots	<u>Imported</u>	Expectorant, Emetic
Ceratoniam siliqua	Carob Locust	Legume	Local	Purgative, Mouth inflammation, Antidiarrhia, Tonic, Anti-ulcer.
Chenopodium album	Chenopodium	Entire	<u>Local</u>	Anthelmintic.
Chrysanthemum cinerarifolium	Insect flower	Flowers	Imported	Anti lice, Asthma, kidney inflammations
Cicer arietinum	Chick-pea	Leaves	Local	Refrigerant, Leaves juice is stomachic, Laxative.
		Seeds		Astringent, Stimulant, Roasted seeds are aphrodisiac, Fired seeds are diuretic, Used in skin disease, Ground seed is eaten to stop mucous & blood while defecation, Treatment of jaundice, Rheumatism.
Cinnamomum camphora	Camphor trees	Wax & gum	Imported	Skin diseases, For rheumatism and heart problems, Analgesic.
		Bark		Antipruritic, Carminative, Cardio tonic, Antiseptic, Asthma, Bronchial disease.

		Fruits		Oxytocic.
		Entire organism		Diuretic, Oxytocic in high dose, Anticancer, Edema, Jaundice, Asthma, Freckle.
Cinnamomum zeylanicum	Cinnamon	Bark	Imported	Germicide, Antidiarrhea, Condiment, Carminative.
Citrullus vulgaris	Water melon	Fruits	Local	Diuretic, Cooling, Demulcent, Refreshing.
		Seeds		Tonic, Aphrodisiac, Vermifuge.
Citharexylum quadrangulare	Fiddle wood. Savannah wattle	Leaves	Imported	To get rid of lipid , Emollient.
Citrus japonica	Orange	Juice	<u>Local</u>	Prevent of cold and influenza.
		Leaves		Demulcent, Anti-inflammatory, Anti-cough, Laxative, Diuretic, For bladder & kidney spasm.
Citrus limonum	Lemon	Fruits	Local	Juice is used as collyrium mixed with ginger & honey for treating cough & cold, Juice & the rind used for diarrhea & dysentery, Prophylaxis from influenza.(fruits peels have anti-cancer activity).
		Seeds		Purgative.
Collinsonia Canadensis	Rich weed	Leaves	<u>Imported</u>	Backache , Vertebral column , Hyperacidity in stomach.
Convolvulus althaeoids	Mallow bind weed	Roots , Fruits .	<u>Imported</u>	Antidiabetic , Astringent, Blood purifying, Diuretic, Tonic, Bronchitis Tonsilitis .
Convolvulus arvensis	Field bind weed	Entire organism	<u>Imported</u>	Leg corns, Skin inflammation, Anticough , Sedative
Corchorus olitroius	Naltajute	Leaves	Local	Demulcent, Tonic, Diuretic, Lactogenic, For softening drawing the breast, Abdominal disorders
Crataegus azarolus	Azerole	Leaves	<u>Local</u>	Hyperlipidimia, Weight loss, Pertussis, Lipoma.

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Crocus sativa	Saffron	Flowers	Imported	Stomachic, Antispasmodic, Promote menstruation, Relieve gout, Analectic, Angiemphraxis, Condiment, Sedative, Hypnotic, Aphrodisiac, Used in case of Bronchitis, Cough, Analgesic, Aphrodisiac, Expectorant, Carminative Regulate menstrual cycle, Anthelmintic.
Cucumis sativus	Cucumber	Fruits	<u>Local</u>	Tumors of liver & spleen, Antacid, Diuretic, Treatment of skin wrinkled, Freckled, Constipation, Thirsty, Tonic, Kidney stones.
Cucurbita maxima	Pumpkin winter squash	bulbs & seeds	Local	Anti-vomiting, Non-poisonous anthelmintic, Diuretic, Nutrient, Antitussive, Dental and throat analgesic.
Cucurbita pepo	Marrow squash	Seeds	Local	Anthelmintic, Motion sickness
Cuminum cyminum	Cumin	Fruits	Local	Carminative, Stomachic, Anti-colic's, Treatment of gastrointestinal tract inflammations.
Cupressus sempervirens	Cypress tree	Oil	<u>Local</u>	Antiseptic ,Anticonvulsion , Traetment of acne .
		Fruits		Antibacterial , Antifungal activity , Antidiarrhia, Antipyretic, Anti-hemorrhoids, Astringent, Stop bleeding , Anemia Anti-rheumatism, Diaphoretic, Diuretic, Relief of teeth pain.
Curcuma longa	Turmeric	Rhizomes	Imported	Anti-leaven, Flatulence, Liver inflammations.
Cydonia vulgaris	Quince	Fruits	<u>Local</u>	Emollient, Burns, Heamorrhoides, Anti-spasmodic.
Cynara scolymus	Artichoke	Entire plant	<u>Imported</u>	Diuretic, Activate liver, Decrease blood cholesterol, Mild laxative.
Cynoglossuf officinalis	Hound's tongue	Root's bark	<u>Imported</u>	Antispasmodic, Anti-inflammatory, Demulcent, Hemorrhoids.

Ecballium elaterium	Squirting cucumber	Roots, Fruits	<u>Imported</u>	Laxative, Anti-rheumatism, Edema, T.B, rubesia. Jaundice.
Equisetum arvense	False horse – tail, Horse pipe	Leaves	<u>Local</u>	Diuretic, Lower blood pressure, Antidote in case of Lead poisoning, Asthma, Benign prostate, Hypertrophy (BPH), Chronic cough.
Erodium malacoides	Erudios	Leaves	<u>Imported</u>	For injuries , legs& hands cracks
Eruca sativa	Rocket, Roquette (Cat Thyme)	Leaves	Local	Stimulant, Stomachic, Diuretic, Anti-scorbutic, General tonic, Aphrodisiac Blood purification, Scurvy.
Ervum esulenta	Latil	Seeds	Local	Mild laxative, Very good for anemia.
Eucalyptus globulus	Eucalyptus	Leaves	Imported	Treatment of UT infections, Antiseptic.
Eugenia caryophyllus	Clove	Buds	Imported	Carminative, Dental analgesic, Local anesthetic, Anti septic.
Euphorbia spinosa	Hippo-phaiston	Fruits	<u>Imported</u>	Anti-septic , Anthelmintic, Tonic, Astringent.
Fagopyrum esculentum moench	Buck wheat , Brank sarrasin	Seeds	<u>Local</u>	Used by pregnant as a tonic & in case of malabsorption.
Faucus carota Daucus carota	Carrot	Seeds	Local	Carminative, Stomachic, Aphrodisiac, Nerve tonic.
		leaf oil		Produce contraction of uterus.
		Fruits		Diuretic, Carminative, Laxative, Sedative, Anthelmintic, Treatment of injuries.
		Roots		Emmagogue, Vermifuge, Antisyphalic, Hypoglycemic activity, Anti-diarrhea, Ulcers, Antitussive, Treatment of damaged hair, Increase the fertility of women, Emollient, Antiseptic, Lactogenic.
		The whole plant		Urine retardation, Bladder infections.

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Ficus carica	Fig	<u>Fruits latex</u>	<u>Local</u>	Laxative, Treat ulcers, Wounds, Skin diseases, Burns, Kidney stones, Emollient, Anti-cough, Corns.
Galanga officinalis	Galangale	Roots	<u>Imported</u>	CNS stimulant.
Globularia alypum	Zoreka	Entire plant	<u>Imported</u>	For abdominal cramps, laxative
Glycyrrhiza glabra	Licorice Liquorice	<u>Root</u>	<u>Imported</u>	Demulcent, Antihistaminic, Expectorant, Anti-inflammatory (peptic ulcer and seborrhea).
Gossypium hirstum	Cotton	Leaves	<u>Local</u>	Pains of uterus and joints, Acute gout.
Helianthus annuus	Sun flower	Leaves	Local	Malaria, Throat problems.
Hibiscus sabdariffa	Karkade	Leaves	<u>Imported</u>	Abdominal analgesic diuretic anti-hypertension activity, weight loss.
Hibiscus sabdariffa	Roselle	Flowers	<u>Imported</u>	Sedative, Antibacterial, Uterus & intestine relaxant, Cardio tonic, Bronchitis, Decrease thirst, Astringent Hemorrhoids, Diarrhea, menstrual Pains, Anti-dysenteric.
Hordeum vulgare	Barley grass	Fruits	Local	Hypoglycemic , Diuretic, Renal calculi , Vasopressin.
Hypericum perforatum	Perfoliate saint johns wort	Entire organism	<u>Imported</u>	Anthelmintic, Aphrodisias , Anxiety , Muscle and joint inflammation.
Jateorhiza calumba	Calumba	Flowers	Unknown	Antiseptic for the urinary tract.
Jatropha curcas	Physic-nut Spurge nettle	Seeds	<u>Imported</u>	Anthelmintic.
Jesminum grandy	Jasmine	Oil	<u>Local</u>	Neuropathy.
Juglans regia	Walnut tree	Peels Leaves	<u>Imported</u>	Anthelmintic ,Anti-diabetic , Protect of hair falling, Anti-dandruff.

Jumiperus communis Jumiperus phoenicea	Juniper	Leaves & fruits	<u>Local</u>	Antidiarrhea, Skin diseases (eczema), Condiment, Anticolic, Anti psoriasis, Carminative, Antiseptic, Diuretic, Tonic, and Anti-inflammatory.
Lactuca sativa	Common lettuce	Seeds	<u>Imported</u>	Sedative.
Lactuca sp.	Garden lettuce	Leaves	Imported	Good source of Iron & vitamins, Treatment of hair loss, Demulcent, Stomachic ,Tonic, Analgesic, Hypnotic, Anticough, Decrease blood sugar.
Laurus nobilis	Sweet bay	Berries & leaves	local	Digestive, Stimulant, Anti-Flatulent, Anti-colic, Treat hysteria.
Laurus sp.	Bay	Leaves	Local	Rheumatism, anti-diabetes.
Lavendula officinalis	Lavender	Flowers	<u>Imported</u>	Antispasmodic, Eczema, Rheumatism, Migraine, Hypnotic.
Lawsonia alba	Henna	Leaves	Imported	Anti bacterial, For hair loss, Seborrhea, Dry skin, Allergy, Eczema, Treatment of wounds, Burns, Antifungal, Emollient, Hair dye.
Leontice leontopetalum	Lion`s leaf	Fruits	<u>Local</u>	Carminative, Weight loss.
Linum usitatissimum	Flax, Lin	Seeds	Imported	Expectorant, Demulcent, Aphrodisiac, Laxative, Relief cold and cough, Treatment of typhoid.
Lolium temulentum	Rye –grass, Darnel cheat	Seeds	<u>Local</u>	Emollient , Purgative , Anti –hypertention activity, Used in case of Atherosclerosis, Nocturnal enuresis.
Lupinus albus Lupinus termis	Lupine	Seeds	Local	Diabetes, good for bones & nerves, for Skin rash & Nile fever & Eczema.
Malva neglecta	Marsk Mellow	Fruits	<u>Local</u>	Nutritional anemia, Laxative.
Malvasilvestris mauritiana	Mallow	Leaves	<u>Local</u>	Treat of cough and bites.

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Mandragora officinarum	Mandrake (Love apple)	Entire organism	Imported	Anesthetic, Relief the pains from the medical operations.
Mentha piperita	Peppermint	Entire herb	Local	Carminative, Stimulant, Antiseptic Spasmolytic, Analgesic, Anti tussive in children, Anti-inflammatory especially breast inflammation, Foot pain, Diuretic, Treatment of diarrhea, Relief of toothache, menstrual pain and rheumatism.
Morus nigra	White mulberry	Fruits	Local	Gingivitis.
Morus rubra	Red Mulberry	Leaves	Local	Astringent, Anti-diabetic.
Musa paradisiaceavar-sapientum	Banana	Fruits	<u>Local</u>	Burns, Throat sores.
Myrobalanus sp (Terminalia horrida)	Indian myrobalan	Seeds Fruits	Imported	For stomach inflammation. (Treatment of gastritis).
Myristica fragrans	Nutmeg	Seeds	Imported	Antiseptic, Carminative, Aphrodisiac, Stomachic.
Myrtus communis	Myrtle	Leaves	<u>Imported</u>	Cough Bronchitis, Sinenses, and Astringent.
Narcissus peoticus	Narcissus , Poet`s affodil	Beans	<u>Imported</u>	Anthelmintic.
Nasturtium officinale	Water cress	Seeds	Local	Stomach pains, Diabetes.
Nerium oleander	Oleander	Leaves, Bark	<u>Imported</u>	Carminative, Antiseptic for teeth & gum, Skin inflammation.

Nigella sativa	Nigella (Black Cumin)	Oil & seeds	Local	Nausea , tonic for skin , Antitussive, influence asthma, For liver disease, Gastro-intestinal tract inflammation, Dysentery, Carminative, Cold, Treatment of renal stones Anti-lice, Anthelmintic, Acne, Rash, Hair loss.
Olea europeae	Olive	Fruits & leaves	Local	Liver disease, Destroy urinary & gall bladder stones, Skin disease, Burns, Reduce cholesterol level, Eczema, Foot pain, Emollient, Treatment of damaged hair, Prevent arteriosclerosis, Secretions of GIT, Laxative, Treatment of skin rash, Anti-psoriasis.
		Bark		Mouth sores astringent.
		Oil		Emollient , Diuretic , Antidiabetic, Hypertension , Constipation, Atherosclerosis, Allergy, Stones in the kidney, Arethritis.
Opuntia ficus-indica	Indian fig	Fruits	Local	Astringent.
Orchis macula	Sahlab	Stem & roots	<u>Local</u>	Gastritis, Dysentery, Hemorrhoids, Urethra bleeding
Origanum majorana	Sweet marjoram Knotted marjoram	Leaves	<u>Imported</u>	Anti-cough, Carminative.
Origanum vulgare	Wild marjoram	Leaves	Local	Anti septic, Anti worm, For cough and liver and stomach diseases
Oryza sativa	Rice	Peels	<u>Imported</u>	Treatment of constipation, & Hyperlipidemia.
		Seeds		Rheumatism, Cause abortion, Diarrhea, Migraine.
Oxalis acetosella	Wood - sorrel	Seeds	Local	Astringent, Diuretic, Expectorant, Styptic, Emmenagogue, Anthelmintic, Used in the case of ejaculation without sexual desire.

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Panax quinquefolius	Ginseng	Roots	<u>Imported</u>	Tonic, Stimulant.
Papaver rhoeas	Corn rose (Red poppy)	Petals	Imported	Expectorant, Digestive Emollient, Diaphoretic.
Peganum harmala	Harmal Syrian rue	Seeds	<u>Imported</u>	Relief of rheumatism pain, Anti-diabetic.
Pelargonium graveolins	Granium	Flowers. leaves, air parts	<u>Imported</u>	Antiseptic, Anti-colic, Carminative.
Phaseolus vulgaris	kidney beans	Seeds	Local	Tincture of green pods used in rheumatism, Sciatica, Renal infection, Eating dried beans without cocking cause vomiting, Anti-diarrhea, Internal hemorrhage, Dried pods without the bean are Diuretic & incase of Diabetes.
Phoenix dactylifera	Palm trees	Fruits	Local	Diuretic, Demulcent, Anti-diabetic, Fresh fruits juice is cooling, Laxative, Gums: useful for Diarrhea, Diseases of genitourinary system.
Pimpinella anisum	Anise	Fruit	Local	Antispasmodic, Diuretic, Carminative, Lactogenic, Sedative, Anti-cough, Treatment of kidney stones.
Piper cubeba	Cubebs	Seeds	Imported	Tonic.

Pistacia lentiscus	Lentisk, Mastic tree	Seeds	<u>Local</u>	Carminative, Aphrodisiac Astringent, Anti cough, for halitosis, Antiseptic, potent teeth & gingival.
		Gum		For cleaning teeth, treat gingival & mouth inflammation, strengthen palate & jaw.
Plantago major	Great plantain	Leaves	<u>Imported</u>	Mild diuretic, Emollient, Treatment of bronchitis Constipation , Bleeding from nose, Diuretic, Analgesic.
Polygonum amphi	Knot weed	Roots	<u>Imported</u>	Antidiarrhea, Antiheamorrhage ,Astringent , Smooth muscle relaxent , Relaxing sore throat.
Protulaca oleracea	Rockling	Entire	<u>Imported</u>	Treatment of hemorrhoids and expectorant.
Prunus amygdalus	Bitter Almond	Seeds	<u>Local</u>	Heart burn
Prunus commonus,	Sweet Almond	Seeds	<u>Local</u>	Prevent cough, Laxative, Demulcent and Treatment of asthma.
Prunus mehaleb	Perfumed cherry	Seeds	<u>Imported</u>	Carminative, Anti diabetic.
Prunus persica	Peach	Fruits	<u>Local</u>	Treatment of damaged hair.
Psidium poniferum	Guava tree	Leaves	Local	Cough and asthma, Decrease body temperature, antipyretic.
Punica granatum	Pomegranate	Branches	Local	For blood strength.
		Fruit peels		Chronic diarrhea For dysentery Kill hock worm.
		Roots bark		Anthelmintic, Astringent.
Pyrus malus	Apple	Fruits	Local	Anti-diarrhea.
		Roots		Anthelmintic, Hypnotic.
Quassia amara	Bitter wood	Woods	Imported	Diabetes.

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Quercus robur	Red oak	Bark	Local	Astringent, Decongestive, Treat hemorrhoids, Prevent internal hemorrhage, For vaginal secretion, Ulcers, Eczema, Dysentery, Diarrhea, Antiheroic, Anti-cancer, Treat uterus dislocation, Skin infection, General weakness in child and old, For nocturnal endures , To stop vomiting , boil its bark with water and use it as gorgor to treat mouth ulcer , To treat stomach cancer , Neuron weakness.
Rananculs ficaria	Lesser celandine	Entire organism	<u>Imported</u>	Antidiarrhea, For colon inflammation.
Raphanus sativus	Radish	Roots	<u>Local</u>	Laxative.
Rhamnus purshianus	Cascara	Barks	Imported	Strong laxative.
Rheum officinale	Rhubarb	Branches	Imported	Jaundice, Astringent, Laxative, Purgative.
Rhus coriaria	Sumach Elm-leaved	Fruits, leaves, cortex	<u>Local</u>	Diarrhea, Vomiting & Syncope. A dye for hair, Anti-cough, Prevent jaundice from reaching the eye.
Ricinus communis	Castor oil	Oil	Local	Purgative, Burns, Hairs emollient.
Rosmarinus affinalis	Rosemary	gums and leaves	Local	For heart problem, Infertility, Antibacterial, Bronchitis.
Rubus sanctus	Black-berry	Leaves	<u>Local</u>	For burns, Diarrhea, Stomach inflammation, Furuncles.
Rumex dentatus	Sorrel	Entire plant	<u>Local</u>	Diuretic, Mild laxative, Food, Astringent, Treat various skin, Mouth & Throat inflammation.
Ruscus aculeatus	Pricky box Butchers broom Knee holly	Roots	Imported	Diuretic, Stomachic, Anti-hemorrhagic, U.T. antiseptic.
		Seed		Stomachic , Diuretic, Astringent, Anti-bacterial activity. Treatment of jaundice, Gout.

Salix acmophylla	Salix	Bark	<u>Local</u>	For wounds, Anesthetic.
Salvadora persica	Tooth brush tree	Branches	Imported	For teeth cleaning, Protects the gum.
Salvia officinalis	Sage	Leaves	Local	Anti bacterial, To relieve cough, Carminative, Antiseptic, Sedative, Anti-diarrhea, Stop milk secretion, Relief menstrual pain, Anti-inflammatory, CNS stimulant, Anti-diabetes.
Santalum album	White sandal	Oil	<u>Imported</u>	Emollient , Used for acne.
<u>Savignya parviflora</u>	Rashaad	Seeds	<u>Local</u>	Antidiabetic activity.
Sempervivum tectorum	Houseleek	Leaves	Local	For skin diseases.
Silybum marianum gaerth	Milk thistle	Leaves, Roots, Seeds	<u>Imported</u>	Diuretic, Increase blood pressure, Used in case of motion sickness.
Smilax arnata	Sasaparilla	Dried roots	<u>Unknown</u>	For some type of skin disease, Diuretic, Rheumatism.
Spica sp.	Spine	Flowers	Imported	Fertilizer for women
Strychnos nux vomica	Nux vomica	Seeds	Imported	Stomachic, Emetic, Aphrodisiac
Styrax officinale	Styrax tree , Officinalis storax	Gum	<u>Imported</u>	Treatment of skin disease.
Tamarindus indica	Tamarinds	Fruits	Imported	Mild laxative
Terminalia chebula	Black myrobalan Chebulic myrobalan	Leaves	<u>Imported</u>	Asthma, Stomach tonic.
Teucrium polium	Mountain germander	Leaves	<u>Local</u>	Treatment of stomach & intestine spasm, kill worm, also for treatment small pox.
Theobroma cacao	Cacao	Seeds	Imported	Mild diuretic, CNS stimulant

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Tilia sylvestris	Linden , Lime tree	Flowers, Bark, Peels .	<u>Imported</u>	Anti- pyretic, Treatment of asthma, Laxative, hypnotic, Anti-spasmodic, anticough, increase GIT motility, Sedative, Antiinflammatory, Decrease blood pressure.
Tragopogon pratensis	Goat's beard Horse tail	Roots	<u>Imported</u>	Anti-cough , Astringent ,Refresh the skin ,Food , Bronchitis
Trigonella foenum graecum	Fenugreek	Seeds	Local	Antibacterial (mouth wash), Tonic, Stomach pain Lactogenic, Urinary tract Anti-inflammatory, Antidiabetic, Laxative, Blood purification For some skin disease, Muscles pain, Hemorrhoids, and Expectorant.
		Oil		Demulcent, Emollient, Mild laxative, Breast enlargement.
Urgina maritima	Squill bulb	Bulb leaves	<u>Local</u>	White Squill: Cardio tonic, Emetic, Diuretic, Expectorant.
Urtica dioica	Stinging nettles	Roots	<u>Local</u>	Anti diabetic, Lactogenic, Diuretic, Analgesic, Anti hemorrhage, Astringent, Relief gout pains, Diuretic, Stop bleeding, Antirheumatism, Split the stones in all kinds.
Urtica urens	Nettle	Leaves	<u>Local</u>	Anti cancer activity.
Valeriana officinalis	Valerian	Roots & lower stems	<u>Imported</u>	Antispasmodic, Antiseptic, Relief stomach pains, Sedative, for arthritis.
Viola tricolor	Wild pansy	Oil	<u>Local &amp; imported</u>	Urocystitis, Prostatitis, Tonic , Treatment of acne .
		Leaves		Eczema , Skin allergy.
		Flowers		Anti-cough, Antiseptic..
Vitex angustastus	Chaste tree	Fruits, Leaves. Flowers	<u>Imported</u>	For eye inflammation, Calm the digestive pains, Condiment, Anti-allergic.
Vitis vinifira	Grape vine	Vinegar	<u>Local</u>	Ear infections, Weight loss.
		Fruits (dry)		Relaxant for all body.

		Leaves		Anti –heamorrhage, Anti-septic, Astringent, Tonic, Diuretic, Blood purifying, Decrease cholestrol level in blood, Anti –anemia.
Zea mays	(Maize Corn)	Oil of the seeds	<u>Local</u>	Diuretic, Urinary tract anti -septic Anti spasmodic Treatment of hair loss & dandruff.
Zingiber officinale	Ginger	Rhizomes	Imported	Carminative, Anti-hypertension, Decrease cholesterol level, Condiment.
Ziziphus spinachristi	Syrian Christ-thorn, jujube	Fruit. leaves, Seeds, gum, roots	<u>Local</u>	Food, Diuretic, For teeth decay, Increase hair growth, Washing the dead body with them make it longer standing , Tonic, Anti-inflammatory, Antidiarrhea , Decrease thirst.
Zizyphus vulgaris	Jujube	Fruit	Local	To get rid of toxic material and for cough.
Zizyphys sativa	Jujube tree, Indian jujube	Fruits	<u>Local</u>	Used in case of chest pain , Relief of asthma .

## DISCUSSION:

In the West Bank of Palestine, plants provided most of the natural products used in traditional folk medicine. This might be due to the diversity of plant resources available in Palestine. On the other hand, the use of animal parts as well as inorganic natural materials in folk Palestinian medicine is not as prosperous as that of plant medicinal materials. Table (1) indicates that 184 plants are used in folk medicine. Analysis of the plant derived materials used in folk medicine indicates that ninety six plants are of local origin and eighty four are imported. The locally obtained medicinal plants are those grow in Palestine and collected by individuals or the healers. Forty three of the plants mentioned in table (1) are also used in traditional cooking in Palestine. Analysis of the therapeutic uses of these plants show that twenty seven plants are used for skin disorders, thirty two plants for kidney disorders, twenty one for diabetic problems, eleven for hypertension, forty as diuretics, and fifty one for digestive system problems. Most of the imported plant materials used in folk medicine is sold in herbal shops and mostly being imported from Asian countries. When herbalists and

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herbal practitioners were asked about motivation of patients to seek for herbal medicine, most of them indicated that patients strongly believe that these herbal remedies are part of their religious belief. The herbalists further indicate that there is no gender bias for herbal therapy seeking; both males and females seek for such therapy. However, most patients seeking herbal therapy are usually of the elderly class of patients who usually suffer from multiple diseases and usually can not afford to buy expensive medications. In fact, most herbal and phyto-therapists are above the age of 55 years. Statistical analysis of the most common plants and their most active therapeutic uses based on herbalist (30 herbalists from various cities in the West-Bank) opinion is shown in table (2). A closer look at the medicinal plants used in Palestine and shown in table (1) indicates that some of these plants might be toxic and further education should be given to herbalists when dealing with such toxic plants. Actually, some herbalists are aware of the toxic effects of some of these plants and they claim to practice extreme caution when dealing with these plants. Some of the plants mentioned in table (1) had been investigated for their positive cardiac (12) and hypoglycemic effects (13) and some of the data in literature indicated that these plants have healing power<sup>(14, 15)</sup>. In a separate survey carried out by the authors among physicians and pharmacists in Palestine indicated that most health professionals do believe in herbal and alternative medicine although most health professionals indicated that they do not trust herbalists and folk healers in diagnosis and in using medicinal plants. In conclusion, this ethno pharmacological survey should encourage people in the field of herbal medicine to preserve the endangered medicinal plants and to do further clinical investigation on the healing power of these plants.

**Table (2): Statistical analysis of the most common plants and their therapeutic uses based on herbalists opinions:**

	<b>Few examples on medical plant used for the purpose stated.</b>	<b>Main medical indications</b>	<b>The number of herbalists who said that these plants are beneficial for the indication stated.</b>
1.	Aloe juice	Skin diseases, healing wounds, purgative, anti acne, peptic ulcer, and have anti diabetic activity.	22/30
2.	Angelica roots, fruits and seeds	Antiseptic, antispasmodic, antipyretic and anti emetic activities.	19/30
3.	Artichoke plant	Diuretic, activate liver, decrease cholesterol level in the blood and mild laxative.	22/30
4.	Azerole leaves	Hyperlipidimia and weight loss.	18/30
5.	Barley grass fruits	Hypoglycemic and diuretic.	19/30
6.	Beal fruits	Acne, healing wounds and have anti-diarrhea activity	29/30
7.	Burdock leaves and roots	Antidiabetic, treatment of skin diseases, antidiarrhea and antiseptic.	19/30
8.	Catechu tree bark	Used in treatment of hemorrhoids and has antidiarrhea activity.	17/30
9.	Celery plant	Antispasmodic, carminative, diuretic and aphrodisiac	23/30
10.	Clove buds	Antiseptic, dental analgesic and carminative.	29/30
11.	Cumin fruits	Carminative, stomachic, anticolitic and treatment of gastrointestinal tract inflammations.	29/30
12.	Eucalyptus leaves	Treatment of UT infections and antiseptic.	28/30
13.	Fenugreek seeds	Antibacterial activity (urinary tract and mouth antiseptic), anti diabetes, lactogenic and used their oil as female breast enlargement.	
14.	Fig fruits latex	Treatment of constipation, treat ulcers, wounds, skin diseases, burns, kidney stones, emollient, anti-cough and	19/30

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		treats corns.	
15.	Garlic bulbs	Expectorant, treat arteriosclerosis, toothache, analgesic, treatment of hyperlipidemia, relief rheumatism pains, anti-cancer, anti gout , anti-asthmatic, hypotensive and have antihistaminic activity.	25/30
16.	Ginger rhizomes	Anti hypertension and decrease cholesterol level in the blood, carminative and aphrodisiac.	22/30
17.	Harmal seeds (Syrian rue)	Relief of rheumatism pain and anti-diabetic.	25/30
18.	Henna leaves	Anti bacterial, Seborrhea, dry skin, allergy, eczema, wounds, burns, antifungal, emollient and Hair dye.	21/30
19.	Karkade leaves	Abdominal analgesic, diuretic, anti-hypertension activity and weight loss.	21/30
20.	Lavender flowers	Antispasmodic, eczema, rheumatism, migraine and hypnotic.	19/30
21.	Licorice roots	Demulcent, antihistaminic, expectorant and anti-inflammatory (peptic ulcer and seborrhea).	28/30
22.	Lime tree flowers and bark	Anti- pyretic , treatment of asthma , laxative, sedative, hypnotic, antispasmodic, anti cough, increase GIT motility, Anti inflammatory and decrease blood pressure.	16/30
23.	Lin seeds	Expectorant, demulcent, aphrodisiac, laxative and relief cold and cough.	21/30
24.	Lion's leaf fruits	Carminative and in weight loss drugs.	25/30
25.	Mallow bind weed roots and fruits	Anti diabetic, astringent, blood purifying, diuretic, and bronchitis.	15/30
26.	Mallow leaves	Treat of cough and bites.	20/30
27.	Marshmallow flowers and leaves	Anti cough.	29/30

28.	Milk thistle leaves, roots and seeds	Diuretic and anti hypertension.	18/30
29.	Nigella seeds and oil (Black Cumin)	Antitussive, asthma, liver disease, Gastrointestinal tract inflammation, Cold, Treatment of renal stones, Anthelmintic and anti-diabetes.	28/30
30.	Nutmeg seeds	Antiseptic, carminative, aphrodisiac, and stomachic.	25/30
31.	Oat seeds	Cure smoking habit, anti diabetic, dyspepsia, treatment of constipation and treat hyper-lipidemia.	22/30
32.	Onion bulbs,	Hypoglycemic, antihyperlipidemic, antibacterial and anthelmintic.	25/30
33.	Peppermint plant	Carminative, stimulant, antiseptic spasmolytic, analgesic, antitussive in children, anti-inflammatory especially breast inflammation, diuretic, treatment of diarrhea, relief of toothache, menstrual pain and rheumatism.	19/30
34.	Perfumed cherry seeds	Carminative and anti diabetic.	19/30
35.	Rice peels and grains	Treatment of constipation, hyperlipidemia and migraine.	22/30
36.	Sage leaves	Anti bacterial, carminative, sedative, anti-diarrhea, stop milk secretion, relief menstrual pain and anti-diabetes.	29/30
37.	Santolina (Entire plant)	Expectorant and stomachic.	19/30
38.	Senna leaflets and fruits	Laxative and used as weight reduction drug.	30/30
39.	Squill bulb (White Squill bulbs)	Cardio tonic, emetic, diuretic and expectorant.	19/30
40.	Stinging nettles roots	Anti diabetic, lactogenic, diuretic, analgesic, anti hemorrhage, astringent, relief gout pains, stop bleeding, anti rheumatism and split the	20/30

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		stones in all kinds.	
41.	Sweet bay leaves	Anti diabetic.	25/30
42.	Turmeric rhizomes	Anti-leaven, flatulence and treat liver inflammations.	27/30
43.	Walnut tree fruits peels and leaves	Anthelmintic, anti-diabetic, protect of hair falling and anti-dandruff.	28/30
44.	Worm wood (entire plant)	Antidiabetic, carminative and stomach tonic.	16/30
45.	Worm seed flowers	Anthelmintic.	19/30

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## **Appendix 1**

### **Herbalist format sheet**

1. Address (or the name of the herbalist):
2. Years of experience of the herbalist:
3. Level of education of the herbalist:
4. Age range of patients attending the herbal shop.
5. List the most common plants used in the Palestinian folk medicine in general and their source:
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
6. What are the most common herbal products used for diabetes mellitus and what active part is being used:
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
  - g.
7. What are the most common herbal products used for hypertension and cardiac diseases and what active part is being used?
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
  - g.
8. How do you evaluate the efficiency of these herbs in treating the aimed disease?