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Toxic effect of herbal preparations in children (Segwa poisoning)

Dr. Akram Kdiar Abass AL-Timimi
Qusay A.AL-Rahim FRCP, FRCPCH, DCH (L)

Department of Paediatric, College of Medicine
University of Baghdad, Iraq

Abstract

The botanical definition of the term herb is specific for certain leafy plants without woody stems. The pharmacologic activity of herbal (plant containing) preparations can be classified by five constituent classes: volatile oils ,resins , alkaloids , glycosides and fixed oils. Since herbal preparation used, careful examination may be aided by knowledge of the herbal preparation. In most cases supportive care and discontinuation of the herbal preparation is sufficient ,some herbal toxicity may require specific laboratory analysis and therapy , additional information concerning specific herbal including use , potential toxicity and popularity should be well understand by individual dealing with yard. To evaluate the toxic effect of herbal preparations (segwa). To visualize the constituents of the most common herbs used in pediatric and how dose they produce toxicity. How to deal with herbal preparation poisoning cases. The population should be informed about toxic effect of segwa trough radio, television and medical health centers specially rural area. From the legal points the segwor should be found and should be told about the segwa especially when dealing with children and if no response legal rights should be used. To don't submitted the herbal preparation from medical therapeutic sector, a well oriented medical staff is necessary prepared (special herbal department).

Keywords: herbal plant, pharmacologic activity, segwa.

Historical background:

Since ancient times and perhaps prehistoric times, peoples of all cultures have utilized , herbal preparations to treat disease and to promote health . A 60,000 year old Iraqi burial site was found to contain eight different medicinal plants suggesting very early historical usage .The earliest surviving written account of medicinal plants is the Egyptian Ebers papyrus c.1500.B.c ,which lists of dozens of medicinal plants and uses . In India the Vedas, epic poems written in about 1500 B.c contain reference to herbal preparations of the time.

In china the divine husbandman's classic written in the 1st century A.D. lists 252 herbal preparations .In ancient Europe herbal medicines were also the mainstays of healing .In the 1st century , the Greek physician Dioscorides wrote one of the 1st European herbal books .Demateria medica which listed 600 herbals and was translated into many languages.

Asia continue to include herbals for spiritual and medicinal purposes based on oral traditions passed from generation to generation [1].

During scientific Revolution, European scientists began to isolate purified extracts of plant products for medical agent.

In the mid -18th century, Edward stone described the success of the bark of willow tree in the cure of fever, in a letter to the president of the Royal society of medicine.

The enormous success of this drug lead to the synthesis of acetylsalicylic acid in 1899, in 1992, over 100 million prescriptions costing were written for NSAIDS in the United States [1].

Today, herbal preparations continue to be dominant from the healing in the developing world because of high cost of "western" medical treatment and the scarcity of "western" trained medical personnel.80% of the world population, use herbal preparation for some aspect of primary health care. In the developed world, there appears to be resurgence of herbal preparation usage [1].

For most people herbal preparation are easily obtained through health food stores, neighborhood pharmacies, complementary practitioners, and mail order companies.

Although these preparations are not classified as medication by FDA, they are often used to prevent or treat medical illness [1].

Despite reports of toxicity Associated with their usage, no systematic evaluation of herbal efficacy, safety is required.

Since patients often do not consider herbal preparations as medications , they may not provide a history of usage unless directly questions. In one recent study 21.7% of respondents in an urban emergency department survey reported the use of herbal preparation.

Herbal preparations used also appears to be higher among populations with chronic illness and also associated with multiple factors, including concurrent illness and diverse socioeconomic and cultural influences [1].

In Iraq study has been done in 1994 including 225 poisoning cases , herbal poisoning (segwa poisoning) represent about 4.4% of the total cases [1] , [2].

Definition of herbal preparation

The botanical definition of the term herb is specific for certain leafy plants without woody stems .However , herbal preparations often include non herb plant materials , even animal and mineral products . The definition of herbal preparation is unclear. Broadly, it includes any natural or traditional remedy , but these terms are poorly defined .Many herbal preparation are used for their non specific adaptogenic properties and lack any disease specific effects .Herbal preparation such as herbal stimulants and sedatives may contain active ingredients , but their intended use is without specific medicinal value. Since many herbal users and herbalists do not consider herbal preparations as medications . The study of herbal preparation is complicated by a lack of standardized nomenclature .As discussed earlier these preparations are often derived from many ingredients, including plants , animals , and minerals . Several plants could be used in treatment of some disease , single plant preparation may have many common names in addition to botanical name [1] , [3] .

Herbal toxicology

There is a growing awareness of the widespread use of herbal preparations in the united states . Frequently, it is only after the patient demonstrates toxicity that the physician seeks information about the use of these products.

Some publicized examples of toxicity from herbal preparation usage include six cases of anti cholinergic poisoning in New York City in 1994 [1]. Although few studies have examined this issue , most herbal preparation used in developed countries appear to be a safe .Mean while western medication were responsible for4.4% at acute medical admissions .In developing countries , the toxicity from herbal preparation usage may be much higher .In south Africa ,traditional medicines and herbal preparations a count for 15.8% of acute poisoning and were responsible for 51.7% of all deaths from acute poisoning.

In the united states there is a little information concerning herbal toxicity with no major U.S toxicologic data bases recording epidemiologic data on herbal preparation use and toxicity [2] , [3].

Herbal pharmacologic principles

The pharmacologic activity of herbal (plant containing) preparations can be classified by five constituent classes: volatile oils ,resins , alkaloids , glycosides and fixed oils [1].

Volatile oils:- are odorous plant ingredients, they are also called ethereal or essential oils, because they evaporate at room temperature.

Resins:- are complex chemical mixture of acrid resin , resin alcohol , resinol ,tannols esters and resens , these are often strong gastrointestinal irritants [4] , [5].

Alkaloids :- are a heterogeneous group of alkaline organic and nitrogenous compounds . The alkaloid compound is usually found through out the plant .Alkaloid are often the most pharmacologically active and most toxic compounds , their pharmacologic actions may be CNS depression or stimulation [1] , [6].

Glycosides :- are sugar esters containing a sugar component (glycol) and non sugar (a glycol) which yields one or more sugars during hydrolysis , usually acts as irritating or cathartics agents ; mucous membrane irritant may destroy red blood cells , and have steroid activity lactone glycosides have Anticoagulant activities [7].

Fixed oils:- are esters of long chain fatty acid and alcohol , herb containing fixed oils generally used as emollients , demulcents and bases for other agents , generally these are the least active and least dangerous of all herbal preparation [1] , [8].

Factors contributing to herbal toxicity

Toxicity of plant may vary widely depending on certain conditions . The time of year or development stage at which the plant is collected may effect its toxicity [9].

In some cases only selective parts of plant used to prepare on herbal preparation may be responsible for its toxicity [9].

The area in which the plant is collected may effect toxicity [9].

Probably , few alleged poisoning are the result of the inherent toxicity of the herbal.

Most are the result of misuse , misidentification , misrepresentation , contamination of product like cadmium , mercury , copper , zinc , arsenic level of these elements may be the result of contamination during manufacturing process of some herbal or patent medication . In some cases such as cinnabar , mercuric sulfide , and calomel (mercuric chloride) [9].

Packaging play important role in toxicity of herbal preparation . Many of these preparation are not even be approved for the use [9].

Classification of toxicity

Herbal preparations are associated with a wide range of toxicologic manifestations. Many individual herbal preparation are associated with multiple types of toxicologic effects general categories of herbal toxicity:

Herbal usage may result in toxicity by altering previous conventional medication therapy. Patient may discontinue or become less compliant with previous therapy with un wanted consequences. Alternatively, the addition of an herbal preparation may effect the pharmacologic effect (e.g. bioavailabity or clearance) of concurrent conventional therapy with resulting increase risk of toxicity [1].

Direct health risks include pharmacologically predictable and dose depend toxic reaction , idiosyncratic toxic reactions , long - term toxic effects , delayed toxic effects .e.g. ingestions of chamomile results in anaphylactic reactions in subject of patient , long term use to laxative results in muscular weakness and hypo kalmia [1].

Toxicity of specific herbal preparations

Cardio vascular toxin:

Aconite , the tubers are the most toxic part of plant and when ingested both cardiac and neuralgic symptoms occur mechanis by increase sodium influxization phase of action potential and intiating pre mature excitation , symptoms can occur from 5 miutes to 4 hours after ingestion.

-Oleander (nerium oleander) is also known as adefla , commonly used as an ornamental plant , has also traditionally used in the treatment of cardia illness , Asthma , cancer , corns , and epilepsy. All parts of the

plant contain the cardiac glycosides, oleandrin, and neriin, as well as the cardenolides gentiobiosyloeandrin and olorside. A deaths are reported in children who have ingested a hand full of flowers and in an adult who mistakenly drank herbal tea prepared from oleander symptoms of toxicity are similar to digoxin toxicity including nausea, vomiting (a b d o minal pain) cramping and dysrhthmias Assays for serum digoxin may cross-react with oleander cardiac glycosides and help with diagnosis , since digoxin-specific Fab has been used to successfully treat human oleander toxicity should be empirically administrated for known or suspected oleander toxicity.[1] , [7] , [10].

Central nervous system toxin

Absinthe cause psychosis, hallucination and intellectual deterioration.

Anticholinergic Agent:

Many pants contain the belladonna alkaloids atropine, (d, L hyoscyamine), and scopolamine (L-hyoscine) .They are often used as Asthma remedies or as hallucinogens occasionally , these plants are misidentified and are ingested in the form of herbal tea.

Nutmeg : product of the evergreen tree myristica fragrans , indigenous to the spice Islands and cultivated in the Caribbean Nut meg has been used by herbalists to treat dyspepsia , musculoskeleted and anthritic disorders , psychiatric conditions , and narcosis and as an emmenagigue and abortificient symptoms of nutmeg poisoning (including nausea , vomiting and CNS effects) occur within several hours of ingesting 5-15-g of nutmeg within 24 hours after an acute delirium and subsequent deep sleep the patient usually recovers un eventfully with exceedingly large doses symptoms may persist four days , hypothermia may be consequence of ingesting large amount of nutmeg. [1] , [11].

Gastrointestinal Toxins:

Goldenseal Z (Hydrastis Canadensis) was originally used by the Cherokee and other native Americana as a dye and an internal remedy. Today, it is used as an stringent, a remedy for the mucous membranes or gastro intestinal tract, and as a treatment of menorrhagia . Gold seal is reputed to be able to mask the presence of illicit drugs on urine drug screens.[1] , [12].

Multiple studies indicate that golden seal does not affect the results of urinary drug screens .Appropriate usage of this herbal is thought to be safe ,but large ingestions can cause vomiting , diarrhea convulsions , paralysis , and respiratory failure .In such cases , the patient should receive support ice care.[12]

Heavy metals: heavy metals poisoning from arsenic , cadmium , Lead , and mercury is associated with various types of herbal preparations consistent consists of stopping consumption of the herbal product and use of an appropriate chelating agent when indicated [13].Clamshell powder was contaminated with copper , chromium , arsenic ,or lead in several case report pay –Loo – Ah ,a red and orange powder used by the Hmong people as a fever and rash remedy was contaminated with lead in one case report traditional Indian remedies for abdominal pain are associated with lead poisoning , one fatality from lead poisoning plants was reported in the united state colloidal silver proteins are promoted by health food stores as antimicrobials , immune system stimulants , and ant inflammatory agents silver toxicity is associated with argyria or bluisl skin discoloration chronic usage is associated with neuralgic deficits , silver deposition in viscered organs and renal damage .[1] , [13].

Miscellaneous:

Garlic: has been used as a food and a medicine since ancient times. The intact cells of garlic contain the odorless, sulfur containing amino acid derivative which has antibacterial activity and gives the herb it characteristic order and flavor. Garlic is used as a traditional remedy for a host of infections and a treatment for hypertension, colic, and cancer, side effects of using garlic extracts include contact dermatitis, gastroenteritis, and vomiting. [13].

Chamomile tea: chamomile tea is a popular herbal drink made from chamomile flower heads . Anaphylactic reactions can occur in patient allergic to rag weed , asters , chrysanthemums , or other members of the composite family ,such reaction are rare but can be life threatening ,the patient need not have sever allergy or be highly a topic to experience across reaction .[14] , [15].

Renal toxins: Aristolochia contain, nephrotoxin causes of fibrosis which is clinically apparent 12-24 months after the initial injury. [1]

Hepatotoxins: pennyroyal oil is a volatile oil extract from leaves of menthe pulegium plant .It is cited as the causative agent in several well documented cases of hepatic failure following ingestion at as a little as 15 ml of the oil , the postulated mechanism is direct heap to toxicity.[1] , [8]

CHAMOMILE, ROMAN
(Anthemis Nobile)

part used flower head.

Constituents : coumar ins scopoletin 7-glucoside, flavonoids :Apigenin , lute olin constituents in quercetin and their glycosides (e.g. apiin luteolin-7-glycoside and rutin) volitate oils :0.4-1.75% angelic and tiglic acid esters 85% other constituents Anthemic acid (better) phenolic and fatty acid , phytosterol co line and inositol , also chama zulene .[13]

Food use : Roman chamomile is listed by the council of Europe as a natural source of food flavoring . Roman chamomile can be added to food stuffs in small quantities with possible limitation of an active principle , chamomile is commonly used as an ingredient of herbal teas.[13].

Pharmacological action :Roman chamomile posses similar pharmacological activities to German chamomile azulen compounds are reported to posses anti-allergic and anti inflammatory properties ; their mechanism is thought to involve inhibition of histamine release , the volatile oil has been documented as having anti- inflammatory activity and ant diuretic and sedative effects following intra peritoneal administration of dose 350 mg 1 kg body weight to rats .The azulenes have been reported to stimulate liver regeneration nobilin have demonstrated in vitro ant tumor activity against human cells.[13] , [14].

Side effects , Toxicity: one group of person should be especially cautious in utilizing chamomile , the tea prepared from pollen-rich flower heads , has caused contact dermatitis , anaphylaxis and other server hyper sensitivity reaction in individual allergic to rag weeds , asters , chrysanthemums ,and similar plants, in fact person allergic to any member of the family composite should avoid this as well as other teas preparation from composite flower head . Animal studies have indicated the oil to be either mild irritant or not and to take any photo toxic effects .Large does not Roman chamomile is emetic and this attributed to the anthemic acid content .Acute toxicity of Roman chamomile in animal is reported to be relatively low Acute LD 50 values in rabbit (dermal) and rats (by mouth) have been stated to exceed 5 gm/kg.

Contra indication .warnings:

Roman chamomile should be avoided by individuals with a known hyper sensitivity to any members of the Asteraceae family .In addition Roman chamomile may precipitate an allergic reaction or exacerbate existing symptoms in susceptible individuals(e.g. asthmatics).Excessive doses may interfere with anticoagulant therapy of the coumarin constituents .The use of chamomile preparations in teething babies is not recommended pregnancy and lacation Roman chamomile is reputed to be an abortifacient and to affect menstural cycle in view of this and the potential for allergic reactions , the excessive use of chamomile during pregnancy and location should be avoided.[13], [14],[14].

NERIUM OLEANDER

FAMILY APOCYNACEAE
Common name: oleander

Description:- This fast growing evergreen shrub can reach up to more than 5 m tall .It forms a rounded mounded to about 3m wide , summer time flowers in red white yellow .Lance shaped leaves range from 10 – 25 cm , used by individual to maintain a nice shape . [7] , [10] , [16].

Parts used : Leaves , flowers , root

Constituents:- leaves contain a number of glcosides Neriodorin ; Neriine ; Neriantine ; folinerin ; Oleandrin ,pseudo-curarine ; Digoside ; Digistroside ;Adynerigenin , Cannogenin ; essential oil wax ; Tannic acid 16-Anhydro desacetyl crypto gonado side.

Medicinal uses :The leaves and flowers are cardio tonic diuretic , emetic expectorant , sternutatory , adecoction of leaves has been applied externally in the treatment of scabies and to reduce swellings . This is a very poisonous plant , containing a powerful cardiac toxin . The root is a powerfully resolvent only used

externally because of it's poisonous nature it is beaten into a paste with water and applied to chancres and ulcer on the penis . An oil prepared from the root used in the treatment of leprosy and scaly skin disease . The whole plant is said to have anticancer properties.
Other use: Dye, insecticide, laxex, parasiticide**.** [7], [10], [17].

Toxicity:

Symptoms:- after chewing or ingesting parts of the plant , there is a location irritation to the mucous membranes of the mouth , and stomach followed by emesis , unlike the pure cardiac glycosides , diarrhea persistent headache and abdominal pain are common in plant poisoning because of the presence of saponins and other substances other wise is similar to that which occurs after over dosage in digitalis therapy sever cardiac sings depend on latent period of particular glycosides involved and to the quantity of glycosides absorbed through the intestine.[7] , [18].

Treatment:-

Active therapy upon an electro cardiograph analysis , if there is evidence of sufficient increase in ventricular irritability such as frequent premature ventricular contractions. Bigeminy or paroxysmal ventricular tachycardia , the patient may be given 5 to 10 g of potassium chloride orally or 80 MEg potassium per liter in 5% dextrose and water I.V as a slow in fusion until improvement . A favorable response will usually occur within 40 minutes and last from 3 to 8 hours. Digitalis toxicity may also produce a variety of conductions defects , if incomplete heart block the idioventricular rhythm is inadequate to support life , isoproterenol may be administrated .Since digoxin-specific fab has been successfully treat human oleander toxicity should be empirically administrated for known or suspected oleander toxicity . The prognosis depend upon recognition of cardiac glycoside as the etiologic agent and on the presence pf preexisting conduction or rhythm defect , cardiac actions at some glycoside may persist for 2 – 3 weeks.[7].

ANTHUM GRAVEOLENS L DILL

Descriptions :plant perennial it's height 70 cm to 120 cm with volatile order , leaves are divided into thread parts ,small yellow flowers cylindrical in shape , seeds is small white in color and compacted , the presence of dark lines on the seeds indicate maturity of pts.

Parts used : Leaves , seeds .[19].

Constituents: Seeds – voltalile oil 3-4% (essential oil) carvone about 53-63% from oil limonene, phellandrene and protein. Aleuron , Tannin , Resin , Abumen , Ca mineral salt.[16]

Herbal use : Used as a natural source of food flavoring (from green leaves and seeds) medically extracts oil has been used for dyspepsia , antispasmodic for children (infantile colic and abdominal distension) also seeds has been used in the treatment of trachoma and menorrhage (pain of menstrual cycle).

Warnings: contra-in directed in renal disease or renal impairment may be nephrotoxic in large doses.[17] , [20].

DRACAENA CINNABARI (DRAGON'S BLOOD TREE)

Descriptions: Older tree, its height exceeds 3 meters, with large number of branches, leaf like saurd with sharp ends. Flowers presence as branch grapes on the end of branch. Flower consists of 6 parts. Fruits are rounded in shape with central core contain 2-3 seed . Tree consists of red resin is called (Dragon's blood tree) .[19]

Parts plant : The red fluid is synthesis by tree.[19].

Consistituent: Resin , Resin acid Resinol ,Resin phenols , enters and inactive constituent is called Resenes.[19].

Medical use : Dragons blood has been used in treatment of colic also is used for tread of eye of camel. Another non medical uses: has been used in manufacturing of dyes , warmish , tooth paste , plaster , ointment , and ink for printing , also may be used rarely for treatment of gas to enteritis initiating strong constipation also used some time for treatment for infected wounds (dirty instrument) .This plant cultured naturally in Yemen .[19]

THUJA OCCIDENTALIS TREE OF LIFE

Descriptions: Tree reaches 10 meter in height, leaves is covered by capsules and one cover the other with pointed cornified ends. [17].

Plants use : Leaves , scales of tree , Tree .[17]

Constituents : Voltaile oil (pinene , fenchone and thujone); thujin ; punitannic acid Thujetic acid , Tannin , pinipicrine , Resin .

Quercitin, occidentalol, Tujaplicin-B or called B-isppropyl Tropolone (antibacterial , anti fungul).[16]

Medical use: A stringent , internally contracts blood vessels restrains perstals is coagulates mucous sectretion prevent secretion of gastric and intestinal juice precipitates pepsin . Externally coagulate blood , albumin gelatin is hemostatic but it is irritant , therefore it is used for mennorr hagia , another use as a diuretic and increase sweating expectorant , antiseptic , insecticide and use as local irritant , another use is usefull in treatment of chromic diarrhea and dysentery.[10],[16].

Toxicity: The tip of tree are the most toxic part , because of the presence of Thujon voltail oil causing muscle spasms and visceral bleeding (on the liver) because it is sever local irritant .Sometime use as inducer for abortion . [17]

PASSIFLORA (*PASSIFLORA INCARNATA*)

Passiflora or passion flower has along history in folk medicine as a calmative, the for nervous unrest and as a sedative. The herb is usually administrated in the form of tea , an extract is also employed in a number of pharmaceutic specialty products marketed in Europe .The constituents responsible for it's depressant effect remain unidentified although Harman has been isolated from plant.[10].

As of 1978, The FDA stated that it had not received valid scientific evidence to support the use of passion flower extract as a sedative or nighttime sleep aid .Therefore the FDA classified passiflora as a product that could not be generally recognized as a safe or effective .[10].

CELERY

Apium gravel ones:

Descriptions :herb exceeding 0.5 meter in height .Leaf is wing is shape and pointed ends , flower is small and greenish in color , root is rounded.[21]

Parts used : Fruit , seeds , leaves , root.[21]

Constituents : Flavonoids-Apigenin apiin , isoquercitrin and others furanocoumarins Apigravin ,apiumetin , apiumoside , bergapten celerin , celeroside , isoimperatorin , osthenol rutaretin seselin ,volatile oils 2-3% many components including Limonene (60%) and selenine (10-15%) and various sesqui terpene alcohols (1-3%) other constituents choline ascorbate , fatty acid.[21].

Herbal use – use as a natural source of food flavoring can be add to food stuff in small quantities .Clearly is started to posses Anti Rheumatic , sedative mild diuretic and urinary antiseptic properties it has been used for arthritis, rheumatism ,goat , urinary tract infection and specially for rheumatoid arthritis with mental depression pharmacological actions in vitro and animal studies ;in mice sedatives have been documented for phthalide constituents exhibit bacterostatic activity against wide range of bacteria .Apigenin has exhibited potent antiplatelet activity in vitro study wit cetery pant extracts have demonstrated onti-inflammatory activities , and hypotensive effect in rabbits and dogs after I.V administration also hypogly came activity has been documented celery juice has been reported to exhibit choleretic activity and the phthalide constitnents are stated to possess diuretic activity.[22], [16].

Side effects , Toxicity :

photosensitivity reaction have been reported as aresult of external contact with celerystem ,these reactions have been attributed to the furano coumarin constituents .Instances of allergy and anaphylactic reactionsto cetery have also been documented following oral ingestion of celery is reported to be mediated by IgE antibodies .Contraindicated in individual with photosensitive reaction or individual with existing plant , pollen or food allergy-Acute LD 50 values (rats by mouth ,rabbits dermal) have been reported as greater than 5 g/kg body weight .celery seed oil is started to be non irritant.

Non photoxic and non-sensitising in human.[21], [22]

GOLDEN SEAL (*HYDRASTIS CANADENSIS* L)

Parts used: Rhizome, root.

Constituents : Alkaloids Isoquinoline – type 2.5 – 6.0 ,hydrastine (major 1.5-4.0%) bebeerines (0.5-6.0%) , beberastine (2-3%) and Canadian (1%) with lesser amounts of related alkaloids including Canada line and other chlorogenic acid , carbonydrates , fatty acid .[23].volatile oil ,resin , meconin , and lactone.[12].

Herbal use :Golden seal is started to be a stimulant to involuntary muscle and to possess stomachic , oxytocic , antihaemorrhagic and laxative properties .Traditionally it has been used for digestive disorders , gastritis , peptic ulceration colitis , anorxia ,upper respiratory catarrh menorrhagia , dysmaenorrhea , and specifically for atonic dyspepcia with hepatic symptoms .The pharmacological activity of Golden seal is attributed to the isoquinoline alkaloid constituents primerly hydrastine and berberine which are reported to have similar properties ,Antibiotic immunostimulant , anticonvulsant , sedative , hypotensive , uterotonic ,cholertic and carminative activities have been described for beberine .Antimuscarinic and antihistamine actions have been documented for beberine.[23] , [24].In rats , herberine has exhibited antipyretic activity three times as effective as asprine .Abroad spectrum of antimicrobial activity against bacera ,fungi and protozoa has been reported for berberine . Anticancer activity has been reported for berberine also inhibit the action of teleocidin a known tumour promoter.Clinical study has shown berberin to stimulate bile and bilirubin secretion and to improve symptoms of chromic cholecystitis and to correct raised level of tyramin in patients with liver cirrhosis.

Side-effects ,Toxicity: Berberine and berberine-containing plants are considered to be non toxic ,however ,the alkaloid constituents are potentially toxic and symptoms of golden seal poisoning include stomach upset , nervous symptoms and depression ;large quantities may even be fatal.High doses of hydrastine are reported to cause exaggerated reflexes convulsions ,paralysis , and death from respiratory failure the root may cause contact ulceration of mucosal surface .The alkaloid constituent of golden seal are potentially toxic and excessive use should be avoided coagulant activity and cardiac stimulant activity have been documented for berberine .[12] , [16] , [23] , [24].

BLACK CUMIN NUTME (*NIGELLA SATIVA*)

Descriptions : perennial plant , leaves are divided into 2-3 parts , flowers are white to blue in color , fruits contain black seeds .Cultured in Yemen in small areas .[20]

Parts used: seeds

Constituents : Alanine , arginine , ascorbic acid , asparagine , campestrol , carvone , cymene , cystine , dehydroascorbic acid , eicosadienoic acid glucose , glutamic –acid , glycine , iron isoleucine leacine , d-limonene , Linoleic cacid Lipase , Lysine , methionine , myristic acid ,nigellin oleic acid , palmittic acid , phenylalanine , phytosterols , potassium , beta sistosterol , alphaspinasterol , stearic acid , stigmasterol , tannin threonine , thymohydroquinone thymoquinone tryptophan.[20].

Medical use : stimulant , aromatic , carminative , digestive , diuretic , emmenagogue excitant , galactatagogue , purgative , resolvent stomachic , sudorific , tonic and vermifuge also stomachic nomibe of mammary cells and has Anticancer properties , also use for a wide variety of other discuses and conditions including bilious ailments , calluses , cancer colic , corns , headache jaundice .[25] , [26] , [27].Sclerosis , skin snakebit , swellings , tumor of the abdomen and eye and warts , for upper respiratory conditions , at lleast of its constituents have shown an antihistamine like action , which explains is positive effect for upper respiratory disease including asthma bronchitis and cough . One of it most obvious uses is for diarrhea and dysentery combined with astringents .The seeds also are a rich source of sterols especially betasito sterol which is known to have anti carcinogenic activity .In India Nigella seeda are combined with various purgatives to allay gripping and colic and also help a kill and expel paracites middle castern unanic medicine affirms its abortifacient properties also use it as a diuretic to relieve ascites , for cough , eye sores hydrophobia , jaundice , paralysis ,piles and tertian fever .[26] , [27].

Precautions : No health hazards or side effects are known with proper administration of designated therapeutic dosage also don't take during pregnancy affect renal function ,Arab is said that "in the black seed is the medicine for every disease except death". [20], [26].

ANCHUSA STRIGOSA
ANCHUSA ITALICA

Descriptions: Herb use as natural flavoring food , it is westrian in nature in Iraq , Iran .Leaves is plant user part .

Herb use :action diaphoretic diuretic tonic , demulcent , tonic .

Constituents: is unknown and may have antiseptic activity but it is not proved in studies Anchusa ataliea increase sweating. [28].

SWEET ORANGE (*CITRUS SINENSIS*)

Description : It is small tree height ranging from 7-12 meter ,grayish brown bark and branches , the oval alternate evergreen leaves , the fruit is earth in shape with smooth to rough , contain seeds and sometimes no seeds , the flowers are whitish in color .[16]

Parts use: Immature fruit, fruit peel, the flower, the leaves.

Constituents: The peel of var contains volatile oil , three glucosides , hesperidin isohesperidin , an amorphous bitter nerolin .Oil of orange flowers is soluble in equal volume of alcohol . Oil of sweet orange peel contains at least 90% 0-limonene and the remaining 10% being the odorous constituents citral , fuming nitric acid gives a dark green color to sweet peel and a brown to the bitter .[16].

Medicine action and uses : The oil is used chiefly as a flavoring agent but may be used in the same way as oil of turpentine in chronic bronchitis it is non irritant to the kidneys and pleasant to take , on the continent an infusion of dried flowers is used as a mild nervous stimulant . The powdered Bitter orange peel should be dried over freshly – burnt lime for flavoring the sweet peel is better ans as tonic , that of Seville or Bigaradia is preferred .Asyrup and an elixir are used for flavoring and a wine as a vehicle for medicines. [29].

Warnings: The compound wine is too dangerous as an intoxicant, being mixed with absinthium to be recommended as atonic.

Another use : fruit is antiscuvy extract from peel of orange has been used in the treatment of abdominal distension and gastrointestinal disturbance .[29].

GLAUCIUM CORNICULATUM

Descriptions: Herb 125 cm in height much brancher and is covered by hiars with nice Odor, Leaves are wing in shape cut into flat; the flowers are small flesh-colored.

Part used: Leaves and flowers. [30]

Constituents : Alkaloid fumarine , fumaric acid and considerable amount of inorganic matter especially potassium salts (potassium carbonate) . [16].

Medical usage: It is a weak tonic very much used in cataneous disease , injaundice in obstructions of the abdominal viscera , scurvy and in cases of debility of digestive oranges .It is also slightly diaphoretic and aperients , also use as antispasmodic and ability colic and as purgative in treatment of psychological constipation , also use for treatment of Ascariasis and for dyspepsia.[30].

Warnings : Fruit or nut should be avoided . The calyx colored toothed and deciduous and taking of large leadin to toxicity nausea , vomiting and neurological irritability. [30].

CUMINUM CYMINUM

Descriptions: is a wild grassy plant with 15-50 cm height, growing in many part of Iran.

Part use: Fruit.

Constituents: Cuminaldehyde (18.7%) alpha – pinene , beta pinene (19.9%) , Para cymene , (25.2%) , gama-terpinene (29.1%) , perrialdehyde (2-4%) and mycreene (1.5%) .[16].

Medical use : The fruit of this plant have been used to treat diarrhea , toothache and epilepsy and may have analgesic effect because it has potential anti-inflammatory and anti-nocieptive activities .[31]

Warnings: preliminary acute toxicity assessment of cuminum cyminum essential oil performed in study has been done on rat.[31] , [32].

WHAT IS THE TREATMENT APPROACH TO PATIENTS WITH HERBAL PREPARATION TOXICITY

A specific treatment strategy should emphasize identification of specific herbal preparation used by the patient concurrent medications and medical illness.

Since herbal preparation used, careful examination may be aided by knowledge of the herbal preparation. In most cases supportive care and discontinuation of the herbal preparation is sufficient ,some herbal toxicity may require specific laboratory analysis and therapy , additional information concerning specific herbal including use , potential toxicity and popularity should be well understanded by individual dealing with yard .[1].

The aim of the study

- To evaluate the toxic effect of herbal preparations (segwa).

- To visualize the constituents of the most common herbs used in pediatric and how dose they produce toxicity.

- How to deal with herbal preparation poisoning cases.

Materials and Methods

This study was carried out in AL-KHALIS Hospital in Diala during period from1st August 2003 to 1st August 2004 , 50 cases were involved , I examine all the children on admission and a special questionnaire was used (data sheet) page (57)

.SAMPLE OF CASES:

The following criteria :

1. Positive history obtained from parents and some times from near relative (grand father , grand mother) , neighbor regarding administration of segwa (herbal preparation) which were obtained from herbalists . Usually the mothers deniad because they afraid from their husbands.
2. Originally the children were suffering mostly from diarrhea and vomiting (figure 1) but after administration of segwa their condition severely deteriorated with new signs and symptoms like coffe ground vomiting and skin erythema.

3. No toxicological tests were available to document poisoning because there was a little information about the constituents of these herbal preparations and their active ingredients.

Criteria:

- Old woman, well-known some time by most of peoples of governorate especially in rural areas.
- She had an experience in dealing with herbal preparation to treat not only paediatric problem also to treat Renal Respiratory, Diabetic patient and other chronic illnesses.
- She obtained herbs from either surrounding villages or from market in large amount; and mixed small amount of the dry herb and pounded it to a powder.
- The quantity of each herb in mixture was unknown .The segwor avoids telling the care givers because she consider it as a (secrete job).

Method:

1. Usually the mother and the child visit the segwor at her home sometimes with grandmother or grandfather (table 1).
2. Herbalist prepare the segwa by dissolve the powder (mixture of herbal preparation) in hot water and then cool it .She don't add sugar to prepared segwa, there 2 ways to give the segwa.

a. Tea spoon (powder of segwa) + ½ cup of tea (30 cc).
b. Cup soon (powder of segwa) + ½ cup water (50 cc)

3. Numbers of doses per day ranging from 1 dose / day to 3 doses / day .The 1st dose was given by segwor, the other doses were given at the child home. If the child deteriorate the parents take the child to hospital for proper management.
4. Most of mothers visit segwor without permission from their husbands, therefore after deterioration of their children condition

they were denies giving segwa to the doctor and to their husbands.

5. treatment of cases :
   - all cases were given intravenous fluid for treatment of severely dehydration ,most of cases were given fresh frozen plasma.
   - Children were severely ill on admission were given 3rd generation cephalosporine (suspicion of septicaemia).
   - Children were developing bloody diarrhea after admission intravenous metronidazol was added (risk of acquire Amoebiasis is very high).

Results

- **Frequency of doses:**

One dose/day Z8 cases (16%)
Two doses/dayZ34 cases (68%)
Three doses/dayZ8 cases (16%)

- **Amount of each dose(two group)**

A. Tea spoon segwa powder (2-3cc) + ½ cup of tea (30 cc boiled water) =13 cases (26%)
B. Cup spoon segwa powder (3-5 cc) + ½ cup water (50 cc of boiled water) = 37 (74%)

- **Response to segwa administration (3 group)**

A. Immediate improvement then deteration= 4 cases (8%)

B. Early deterioration with no improvement =32 cases (64%)

C. No change but the patient was originally tired = 14 cases (28%)

- **Residence :**

A. Rural area =38 cases (76%)
B. Urban area =12 cases (24%)

- **Clinical feature (on admission to hospital) :**

1. Severe dehydration and letheragy = 49 cases (98%)
2. cyanosis = 11 cases (22%)
3. Irritability = 29 cases (58%)
4. Pallor + bluish discoloration around eye (sunken eye) = 41 cases (82%)
5. Coffe ground vomitus = 26 cases (52%)
6. Respiratory embracement = 13 cases (26%)
7. Other (skin rash) = 3 cases (6%)

- **Treatment were giving to the patient**:

1. All the patient ware treated by intravenous fluids frequent used of fresh frozen plasma (20 cc /kg)
2. 14 cases (28%) severly ill child were treated by cefotaxime 100 mg/kg intravenously 6-hourly.
3. Few days after admission bloody diarrhea were developed in few cases so metronidazol 30mg/kg intravenously 8 hourly was added .

- **Out come** :

1. 26 cases (52%) improvement and discharge within two days.
2. 18 cases (36%) contain severe dehydration lethargic , diarrhea and vomiting with slowly improvement and prolong hospitalization(more than 5 days) .
3. 6 cases (12%) death.

Table (1) number of children in each family

NUMBER OF CHILDREN (%)	CAUSES
30 (60%)	1- Consultation of doctors without improvement 2- Encouragement of relative . 3-Posative experience (improvement) with past child
17 (34%)	1- Encouragement of relative . 2-Posative experience (improvement) with past child.
3 (6%)	1- Consultation of doctors without improvement

Table (2) causes for administration of segwa

AGE OF CHILDREN (YEARS)	NUMBER OF CHILDREN (%)
1-3	30 60% 1YEAR 12 =40% 2YEAR 9 =6.66% 3YEAR 9 =6.66%
4-6	15 30%
> 6	5 10%

Discussion

- 38 cases (76%) from the rural area compare to 12 cases (24%) from urban area due to :

- Low level of education (84% for mother 56% for father primary education) ,Figure (2) , table (2)
- Mothers were not present for long at home because they work in farms and this lead to deteriorate the condition of baby.
- Low income of some families unable them to visit the doctor for consultations so the mother visit the segwor because their treatment cheaper than doctor . As mention in the literatures .[1]

- Level of education of mothers and fathers (84% , 56%) respectively for secondary education and these are attributed to

- They did not consultate the peadiatrician
- Mothers visit segwor without permission from their hasbands.
- Because many family did not favor admission to the hospital so visit segwor, because of antispasmodic activity of certain herbs (Anchusa strigosa , cummun , Anethum – graveolens) , initiating state of constipation ; therefore family consider baby was improved?! , this may lead to toxic mega colon and increase risk of septaesemin which is line with the other workers As mention in the literatures. [17] , [20], [28] , [31] , [32] .

- 8 cases took one dose (16%).
  34 cases took two doses (68%).
  8 % cases take one dose (16%).

- For those taking one dose 6 cases were improved within short time , only two cases died . This may be attributed to anaphylactic reaction caused by chamomile or celery , also chamomile may aggravated any under lying disease children who took one dose of segwa a rapid improvement as mention in the literatures .[1] , [9] , [13] , [14] , [15]
- For those taking two to three doses ,most of them remain on the hospital for long time and these could be attributed to toxic effects of segwa e.g (nerium oleander toxicity) digioxin like toxicity but differ in the presence of abdominal pain , diarrhea in comparision with drug digioxin toxicity as mention in the literatures [7] , [10], [16] , [18]. Anethum graveolens has Anti spasmodic effects or passiflora and citrus sinesis have CNS depression . remember that these cases originally tired because of prolong diarrhea and vomiting as mention in the literatures [10] , [17],[20],[23],[24],[29].

Response to treatment

● 4 children (8%) had little improvement then rapid deterioration due to vomiting directly after segwa ingestion.

● 32 cases (64%) deterioration without improvement more than half of them were given two – three not toxic effect of segwa oreparation and that explain why diarrhea and vomiting is continuous and why the general condition deteriorated this may be due to Nerium oleander , Golden seal or due to Glaucidum corniculatum as mention in the literatures [7] , [12] , [18] , [23] , [24] , [30] .

• Although patient taking intravenous fluid (dehydration) the letheragy and poor feeding is continuous this fact could be due to CNS depression effects of pass flora and peel of citrus sinensis [10] , [29].

Most herbs of segwa preparation has anti spasmodic effects e.g Anthum , gravolens , Anchusa Italioca , chamomile ….etc.

So Anticholenergic toxicity could be masked by dehydration dry mouth , decrease urinary output , but constipation effects may increase risk of septicemia and organ failure as mention in the literatures [13] , [14] , [15] , [17] , [20] , [28].

● 4 children (8%) had not changes originally deteriorate due to prolong diarrhea renal function already is decreased and could be heralded by renal toxic effect of segwa like Anethum graveolens , cuminum cyminum as in the [17] , [20] , [26].so most of them were remaind for long period on the hospital (more than five days) and 3rd generation cephalosporine were given to them because septicaemia was highly suspected.

Mortality:

Six (12%) children died . probable causes for their death .

1. Toxic effects of segwa like Anaphy lactic reactions ,digoxin like effect.
2. Cardiac Arrhythmia as in Digoxin like effecxt.
3. Organ failure Renal failure.
4. Septaemia due to Antispasmodic effect , sluggish bowel movement.
5. Exaggerated underlying disease like Asthma as seen in one child and died within hours after admission could be due to chamomile..

Conclusion and Recommendations

The popularity of herbal preparation (segwa) is expected to increase in this country for many causes . Although most herbal users will suffer no ill effect , both herbal users and clinicians should be aware that these reparation are pharmacologically active with potential for toxicity.

They may interact with prescription medications to increase the toxicity of the medication or decrease it's therapeutic effect.

Patient with specific medical condition may have increased risk of toxicity when using herbal preparation.

Herbal users should be aware that these preparation are poorly studied scientific proof of efficacy is taking for many preparation , there is no standards exist for their manufacture.

Herbal preparation (segwa) do not contain the purported amount of the active ingredient sometimes contain contaminants.

The herbalist stores herbs in un healthy space , and didn't have correct medical advice and serous toxicity as the result of improper identification of herbal preparation by segwor , so segwor may be un ware of their products potential for toxicity.

Clinicians should be familiar with herbal preparations and their potential for drug interactions and adverse effects, every patient history should included questions assessing the concurrent use of herbal preparation.

The population should be informed about toxic effect of segwa trough radio, television and medical health centers specially rural area.

From the legal points the segwor should be found and should be told about the segwa especially when dealing with children and if no response legal rights should be used.

To don’t submitted the herbal preparation from medical therapeutic sector, a well oriented medical staff is necessary prepared (special herbal department).

And the most important information about herbal preparation should be studied regarding pediatric patients.

- Constituents of plant use.
- Active ingredients.
- Toxic effects
- Doses of herbal preparation.
- Interaction specially with concomitant medical prescriptions.

References

1. Herbal medicines (2nd edition), Joanne Barnes, Linda, A-Anderson, and J .David phillipson.
2. Accidental poisoning in children A clinical and epidemiological study Mousal University 1994.
3. Ginseng, Lawrence review of natural products App-1994.
4. Chinese Cucumber, Lawrence review of natural products App-1990.
5. Antieholinergic poisoning associated with an herbal tea-New York City.
6. Lewis w: Ginseng revisited N Engl Med 1980; 243; 31.
7. British drugs pharmacobia 5th edition.
8. Mohabbat. O Younos ;M S Merzad A A et al An out break of hepatic veno-occlusive disease in north western Afghanistan Lanced 1976;269-271.
9. Chevalier A;The Encyclopedia of medicinal plant New York D K publishing – 1996.
10. Pharmacegnosy varro E.Tyler , PH.D professor of pharamacognosy Executive vice president for academic Affaris purdue University 9th edition.
11. Nutmeg .The Lawrence Review of natural products Levittown ,pA pharmaceutical ; formation Associates ; sep.
12. Botanical hydrates Canadensis family .Int-net.
13. Plant toxicology and dermatitis.
14. Caster line C L –Allergy to chamomile tea JAMA 1980; 330-331.
15. Berry M, The chamomile, pharm. J 1995; 254,191-193.
16. Medical plants In Iraq, University of Agriculture –Baghdad 9th –edition.
17. Medical use of plant; Dr .Ameen Ruiaha 7th edition, Lebanon.
18. Sim s.k medicinal plant glycosides Toronto ,university of Toronto press-1967.
19. Medical plants in Yemen ;Salim Badeeb ;2nd edition.
20. Advantage of plants ; for DA wood.
21. Gargsk et al glycosides of opium , graveolens planta Med 1980;38;363-365.
22. Gray sketal , coumarins from apium graveolens seeds phyto chemistry -1979;18;1580-1591.
23. Glege Jetal .la Canada line nouvel alkaloid d.hydrastis phyto chemistry -1974;13;675-676.
24. Genest K, Hughes DW plant, natural product.
25. Botanical hydratis Canadensis family Int-Net.
26. Botanical “Herbal preparation” toxicity of Nut gall u.s.p California from Int-Net.
27. Black cumin, fitch, Medicinal use from Int-net.
28. Anchu Za strigosa, Anchu Za Italica Medical use from Int-net.
29. Medicinal action anduse of citrus sinesis from Int-net.
30. Botanical source of Glacium corniculatum king American Dispensatory, 1898 fumaria.
31. Analagesic effect of the fruit essential oil of cuminum cyminum Linn from Int-net.
32. Zargari A (1989) Medicinal plants vol.11 Tehran University press Tehran pp.519-521.

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