

Poisonous Plants

Lecture (6)

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• **Hypericaceae - St. Johnswort Family**

***Hypericum perforatum* L. - Common St. Johnswort, Goat-weed, Klamathweed** حشيشة القلب، روجة

Description: Perennial herb, much branched. Leaves opposite, sessile, entire, glabrous with very small, almost transparent dots. Flowers numerous in open, leafy, flat-topped clusters; petals 5, yellow; stamens many. Fruit a 3-valved capsule with many seeds.

Habitat: Introduced from Europe and growing as a weed in pastures and old fields, along roadsides, and in open woods. Altitude 1500-2000m.

Distribution: common in the slope of the mountains of Kurdistan, Arl Gird Dagh and Chia Mandali.

Group number: 4. minor importance.

Poisonous principle: Hypericin, hypericum red, fluorescent substance.

Periodicity: June to October.

Animals poisoned: Horses and cattle sheep.

Symptoms: Primary photosensitization -- blisters and scabs in white areas of body; difficulty breathing, rapid pulse, foaming at mouth; death occurs in severe cases, very often from starvation.

Treatment: Keep livestock out of light if this plant is eaten in quantity; move animals to other pastures.

Related plant: *H. crispum* L.



• **Brassicaceae - Mustard Family**

The members of this family are not usually considered to be poisonous. Although grazed frequently without harm, they produce seeds that are rich in one or more mustard-oil glycosides which can give trouble under certain conditions, or they may cause nitrate poisoning. Feeds containing large amounts of seeds of *Brassica spp.* (mustard), *Lepidium spp.* (pepperweed), *Raphanus spp.* (wild radish) or others can cause intestinal disorders,

abortion, hemolysis, or paralysis of the heart and lungs when fed to cattle, horses, and pigs.

Brassica arvensis* L.** Synonyms: ***Sinapis arvensis, (wild mustard, charlock) فجيلة

Describe: *Sinapis arvensis* reaches on average 20–80 centimetres (7.9–31.5 in) of height, but under optimal conditions can exceed one metre. The stems are erect, branched and striated, with coarse spreading hairs especially near the base.[1] The leaves are petiolate (stalked) with a length of 1–4 centimetres (0.39–1.57 in). The basal leaves are oblong, oval, lanceolate, lyrate, pinnatifid to dentate, 4–18 centimetres (1.6–7.1 in) long, 2–5 centimetres (0.79–1.97 in) wide. The cauline leaves are much reduced and are short petiolate to sessile but not auriculate-clasping. It blooms from May to September, or May to August, in the UK.[2] The inflorescence is a raceme made up of yellow flowers having four petals.[2] The fruit is a silique 3–5 cm long with a beak 1–2 cm long that is flattened-quadrangular. The valves of the silique are glabrous or rarely bristly, three to five nerved. The seeds are dark red or brown,[1] smooth 1-1.5 mm in diameter.

Distribution: found in Hillside of Jabal Hamrin . time for bloom (March-April).

Habitat: Disturbed places, roadsides, fields, pastures, agronomic crops, orchards, vineyards, ditch banks, dry washes.

Active principle: It contains chemicals of seed contain the class glucosinolates, including sinalbin, enzyme myrosin, Glucosinolates

Mode of action, Symptoms: Salivation; Collapse; Death



***Lepidium draba* L.** whitetop or hoary cress, or Thanet cress ، جنبيرة، حرف مشرقى

Scientific Name Synonyms: *Cardaria draba*

Describe: Habit: Perennial herb, rhizomed, densely stiff-hairy or glabrous. **Stem:** generally 1, (0.8)2--6.5(9) dm, many branched distally.

Leaf: basal not rosetted, early-deciduous, (1.5)3--10(15) cm, obovate to spoon-shaped or ovate, margin dentate or entire; mid-cauline (1)3--9(15) cm, (0.5)1--2(5) cm wide, ovate to elliptic, lanceolate, or obovate, sessile, clasping or base lobed, dentate or entire. **Inflorescence:** panicle, elongated or not; rachis glabrous or hairs curved to straight. **Flower:** sepals 1.5--2.5 mm; petals (2.5)3--4(4.5) mm, (1)1.3--2(2.2) mm wide, obovate, white; stamens 6. **Fruit:** indehiscent, (2)2.5--3.7(4.3) mm, (3.2)3.7--5(5.6) mm wide, cordate to +- reniform, flat, tip obtuse to tapered, wingless, notch 0; valves glabrous, net-veined; style (0.6)1--1.8(2) mm; pedicel ascending to spreading, 5--10(15) mm, cylindric, glabrous or puberulent adaxially. **Seed:** 1.5--2.3 mm, ovate.

Ecology: Disturbed areas, saline soils, pastures, fields.

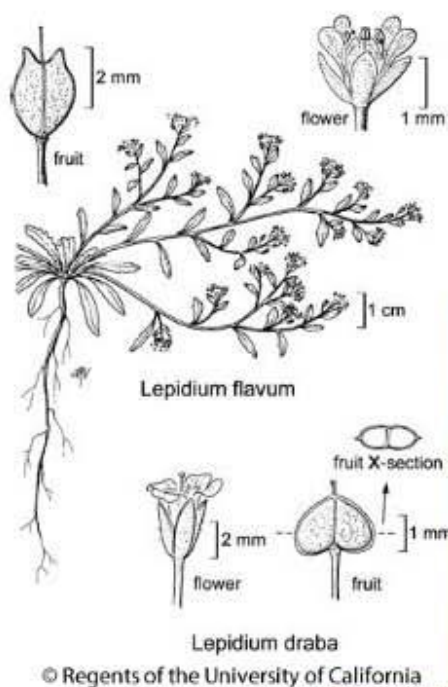
Distribution: common weed along channels and field . in Shebicha, Azizia, Baghdad, Arbil, Hilla, Sinjar, Amadia, ... etc.
Hazardous Plant Parts:

Type and Class of Livestock: Sheep and goats; considered mildly toxic to cattle

Active principle: hydrocyanic acid in young plant.

Toxicity class: Toxic but rarely eaten in sufficient quantity to cause problems. Young leaves contains HCN (prussic acid) and are suspected of poisoning stock.

Mode of action, Symptoms:



• **Primulaceae - Primrose Family**

Anagallis arvensis L. - Scarlet pimpernel ، اذان الفأر، صيجان ، عين الجمل، قرلاشي

Description: Low-growing, sprawling, herbaceous, winter annuals often rooting at the lower nodes; stem 4-angled in cross-section. Leaves opposite, ovate, entire margined, sessile. Flowers solitary in the leaf axils, on long stalks; 5-parted with fused petals, scarlet or brick red, sometimes blue or rarely white, opening only in fair weather, quickly closing at the approach of summer storms or very cloudy weather. Fruit a capsule dehiscent by a terminal cap, recurved due to a drooping stalk.

Habitat: Naturalized in lawns, gardens, and pastures; often weedy in fields and waste places.

Distribution: in dampish place, found in altitudes of 10 to 350m, in Rustam, Basrah, Baghdad, Shrgat, Tuz, Jebal Hamrin... etc

Group number: 3. (Dangerous but uncommon).

Poisonous principle: cucurbitacin B, arvenin I and arvenin II (cucurbitacins), triterpene saponins, oxalates.

Parts of plant: all parts, especially roots

Periodicity: June through September.

Animals poisoned: All livestock.

Symptoms: Depression, anorexia, diarrhea with ingestion of plant parts to 2% of animal weight. cucurbitacins bind to microtubules and are cytotoxic, diuretic, substantial ingestion causes gastrointestinal disturbance, trembling, slightly narcotic, kidney damage

Treatment: Emesis or gastric lavage.

Necropsy: Hemorrhaging of kidney, heart, and rumen, congestion of lungs, and a pale, friable liver.



• **Rosaceae - Rose Family**

***Prunus persica* (L.) Batsch. - Peach.** خوخ ، شفتالي

Description: *Prunus persica* grows up to 7 m (23 ft) tall and wide. However, when pruned properly, trees are usually 3–4 m (10–13 ft) tall and wide.[8] The leaves are lanceolate, 7–16 cm (2.8–6.3 in) long, 2–3 cm (0.79–1.18 in) broad, pinnately veined. The flowers are produced in early spring before the leaves; they are solitary or paired, 2.5–3 cm diameter, pink, with five petals. The fruit has yellow or whitish flesh, a delicate aroma, and a skin that is either velvety (peaches) or smooth (nectarines) in different cultivars. The flesh is very delicate and easily bruised in some cultivars, but is fairly firm in some commercial varieties, especially when green. The single, large seed is red-brown, oval shaped, approximately 1.3–2 cm long, and is surrounded by a wood-like husk. Peaches, along with cherries, plums and apricots, are stone fruits (drupes).

Habitat: Woods and along fence rows, edges of fields, and often in abandoned fields. Stump sprouts are common.

Distribution: Diyala, Duhok, Erbil and Sulaymani.

Group number: 1. (Dangerous).

Poisonous principle: Hydrocyanic acid (also called prussic acid), which is one of the decomposition products formed by the action of enzymes on the glycoside amygdalin. Many factors appear to contribute to the formation of the acid, but it is most commonly found when the leaves are partially wilted. When fresh leaves are eaten, they release hydrogen cyanide (HCN) in the stomach or rumen after mastication.

Parts of plant: Leaves, twigs, bark, or seeds. Discarded fruit pits should not be available to dogs or caged birds.

Periodicity: Spring, summer, and fall; fresh, or wilted due to frost, drought, or broken branches.

Animals poisoned: Cattle, horses, sheep, goats, dogs, and birds.

Symptoms: Peracute course: difficult breathing, vertigo, spasms, convulsions, coma, and sickness of short duration, followed by death. Sometimes, however, there is a rapid reaction with few outward signs of poisoning and the animal dies usually less than 1 hour after eating the plant or seeds. Eating very small amounts, even of fresh leaves, is cause abortions in cattle.

Treatment: Parenteral sodium nitrite and sodium thiosulfate by a veterinarian may be helpful if given promptly. Oxidizing substances such as potassium permanganate or hydrogen peroxide given as a drench may be of some help. Also vigorous respiratory, heat, and nerve stimulants would be of aid.

Necropsy: Blood and mucous membranes become bright red, and blood clots slowly; congestion onf liver and distension of venous system; congestion and hemorrhage in the trachea and lungs, and on serous membrane surfaces; odor of almonds may be apparent.

Related plant: *P. amygdalus*



***Photinia* spp. – Photiniat, فوتونيا**

The evergreen photinias are popular ornamental shrubs grown for their round clusters of white flowers, red berries, and particularly their red new leaves in the spring. Cuttings from these shrubs can be poisonous because they contain hydrocyanic acid similar to Prunus .

Description: Evergreen shrubs, 10-15 ft tall. Alternate, oblong-ovate serrated leaves, copper-red (when young) turning dark green in 2-4 wk. Prominent, whitish flowers in spring; showy, red berries in fall.

Toxicity: Some varieties of Photinia are toxic due to the presence of cyanogenic glycosides in the vacuoles of foliage and fruit cells.[11] When the leaves are chewed these compounds are released and are rapidly converted to hydrogen cyanide (HCN) which blocks cellular respiration. The amount of HCN produced varies considerably between taxa, and is in general greatest in young leaves.[12] Ruminants are particularly affected by cyanogenic glycosides because the first stage of their digestive system (the rumen) provides better conditions for liberating HCN than the stomachs of monogastric vertebrates

Affected Animals : All grazing animals, mostly ruminants.

Toxic Principle and Effects : Cyanogenic glycosides in foliage and fruits, hydrolyzed in GI tract to free cyanide, thereby affecting cellular respiration. See cyanide poisoning, Cyanide Poisoning: Introduction . Prognosis good if animal survives for 1 hr after signs begin.

Comments and Treatment : Acute outcome precludes effective treatment for most; IV sodium nitrite/sodium thiosulfate treatment of choice. Picrate test indicates toxic potential of the plant. See cyanide poisoning, Cyanide Poisoning: Introduction.



• **Fabaceae, Faboideae - Bean or Pea Family, Pea Subfamily**

***Lupinus spp.* – Lupines** ترمس، حمص ثبئة

Description: Perennial forbs 0.5–3 feet tall, originating from a taproot; leaves palmately compound, divided into 5–7 finger-like leaflets; flowers are blue, occasionally white, pink, yellow, or blue-and-white, found in loose clusters around the upper stalks; fruit is a pea-like pod, 2- to 12-seeded.

Habitat: Sandy soil of pinelands and scrub oak woods, or open fields, and roadsides.

Group number: 2. (Dangerous, but rarely eaten.)

Poisonous principle: Various quinolizidine alkaloids in fresh and dry seeds. And piperidine alkaloids, Lupinine and several other quinolizidine alkaloids. Sheep have died from eating as little as 0.5–1.5% of their body weight (0.5–1.5 lb for a 100-lb sheep) in seed pods and seeds. It takes 7–24 lb of lupine per 100 lb of body weight to poison horses. Cattle fed 1.5 lb of lupine per day during the breeding season have given birth to calves with crooked legs and other congenital deformities.

Parts of plant: Leaves and particularly the seeds.

Animals poisoned: Sheep, cattle, goats, horses, pigs.

Symptoms: "Lupinosis" - nervousness, difficulty breathing, frothing at mouth, convulsions, and coma. Teratogenic effect (crooked calf disease) in cattle. Consuming lethal quantities results in loss of condition, a rough and dry coat, excitement, animals running about and butting into other animals and objects, difficult breathing, trembling, frothing at the mouth, depression, convulsions, and coma followed by death. Ingestion of sub-lethal quantities by pregnant cows may result in calves born with marked congenital deformities. This syndrome, known as crooked calf disease, is characterized by malformation of the forelimbs, neck, and back, and in some instances a cleft palate.

Treatment: Do not disturb sick animals; remove from source as they begin to recover. No effective treatment, but survivors recover completely. See also Mycotoxic Lupinosis .



***Medicago sativa* L. - Alfalfa جت**

Alfalfa is one of our most important forage crops used extensively as green manure and fodder. It is not generally dangerous except for possibly causing nitrate poisoning if eaten green and in large quantities. However, when in flower it is visited by blister beetles (*Epicauta* spp.), which may live in great numbers in baled alfalfa hay. These beetles feed on the pollen and nectar of alfalfa. Ingestion (by horses in particular) of hay contaminated with these beetles has resulted in toxicosis. Other animals poisoned are cattle, sheep, goats, rabbits, rats, and dogs .

Distribution: Rawanduz, Sulaymaniyah, and most regions of Iraq, especially the central region.

Poisonous principle: Cantharidin, a potent vesicating agent. Lethal dose: 0.5 mg/kg.

Symptoms: Intense, direct irritation of the skin and mucous membrane of oral cavity, esophagus, stomach, and intestines. Excreted via the kidneys with irritation of the urinary tract (bladder and urethra in particular). Horses -- large dose: death from shock within hours of ingestion. Smaller doses: gastroenteritis, nephrosis, cystitis, and urethritis (anorexia, soft, and/or mucoid to bloody mucoid feces, intestinal atony, colic dysuria frequent, painful urination, or oliguria to anuria, and hematuria). Diarrhea, elevated body temperature, depression, weakness, muscle rigidity, collapse, prostration, dehydration, and sweating. Myocarditis may initiate cardiovascular signs: tachycardia, congested mucous membrane, and

others. Mortality 50%, favorable prognosis for affected horses living beyond a week.

Treatment: No specific treatment. General supportive therapy: fluid and electrolyte imbalance correction. Broad spectrum antibiotics. Avoid potentially nephrotoxic antibiotics (aminoglycosides).



***Melilotus spp.* – Sweetclover** الحَنْدَقُورُ أَوْ الذَّرَقُ

Description: Annual or biennial forbs that are highly branched and 2–6 feet tall; stems are robust, erect, and sparsely hairy; leaves are divided into three finely toothed ovoid leaflets; flowers are white or yellow, about 0.25 inch long, pea-like, borne in slender clusters arising from the axils of the leaves; fruit is an egg-shaped pod, one- (usually) to four-seeded.

Habitat: in fields, roadsides, and waste places; found in a wide range of soil and moisture conditions.

Group number: 4. (Of minor importance).

Parts of plant: Leaves, flowers, and fruit. The toxicity is retained by the plant for extended periods.

Animals poisoned: Cattle and sheep; continued exposure to hay or silage containing these plants may cause extensive internal hemorrhages. although other classes of livestock are mildly susceptible.

Poisonous principle: Coumarin is a harmless substance, but under certain conditions (damage by fungi or frost or dry weather, badly harvested, molding when stacked with high [over 50%] moisture, or other unknown conditions) it is changed to dicoumarol, a potent anticoagulant, it interferes with the proper functioning of vitamin K. There is insufficient vitamin K available for the production of prothrombin, which is essential for blood coagulation.

Toxic effects are clearly seen at levels of 20–30 ppm of dicoumarol. Levels of dicoumarol have been measured as high as 165 ppm. Moderately toxic sweet clover hay will produce Signs of Poisoning in 3–8 weeks, the average being about a month. Sweet clover is not a problem when grazed.

Conditions of Poisoning: Losses from sweet clover poisoning historically coincided with its popularity as a hay or silage. It was around

this time period (early 1920s) that a seemingly new clostridial-type hemorrhagic or blackleg-type of disease was recognized. Eventually, the feeding of sweet clover hay was linked to the disease. Only damaged or spoiled sweet clover hay or silage is toxic. The damaged hay is generally moldy. The mold may not be readily visible because the fungus is in the stalk cavities.

There is no evidence that green sweet clover growing on the range, or properly cured sweet clover hay, is ever toxic. Under these conditions, it provides good forage for all classes of livestock. Any questionable hay should be inspected by a qualified individual before feeding. Moldy sweet clover can be safely fed by either alternating (at less than 2-week intervals) or mixing with good-quality hay.

Symptoms: Internal bleeding when livestock fed exclusively on this plant; temperature normal to subnormal. Animal becomes weak, anemic, dyspneic, with hemoptysis, epistaxis, and bloody feces. Fetal death and abortion possible.

Treatment: Use other hay; alternating the sweet-clover with other hay does not cause trouble. Blood transfusions. Use vitamin K1 in 5% dextrose.

Necropsy: Gross hemorrhages throughout; nephritis.

In Iraq there is White Sweet Clover *M. alba* حندوق



***Robinia pseudoacacia* L. - Black locust سنط كاذب، روبينا**

Description: (Fig. 27) Shrub or usually a tree, with alternate, odd pinnately divided leaves, the leaflets 7-25, entire and oval or elliptical. Stipular spines present. Flowers white in drooping racemes. Legumes flat.

Distribution: north of Iraq especially Aqra, this species that entered Iraq recently.

Habitat: Dry woods, fields, roadsides, and fence rows.

Group number: 1. (Dangerous).

Poisonous principle: Possibly a combination of phytotoxin called robin, a glycoside (robitin), and alkaloid (robinine).

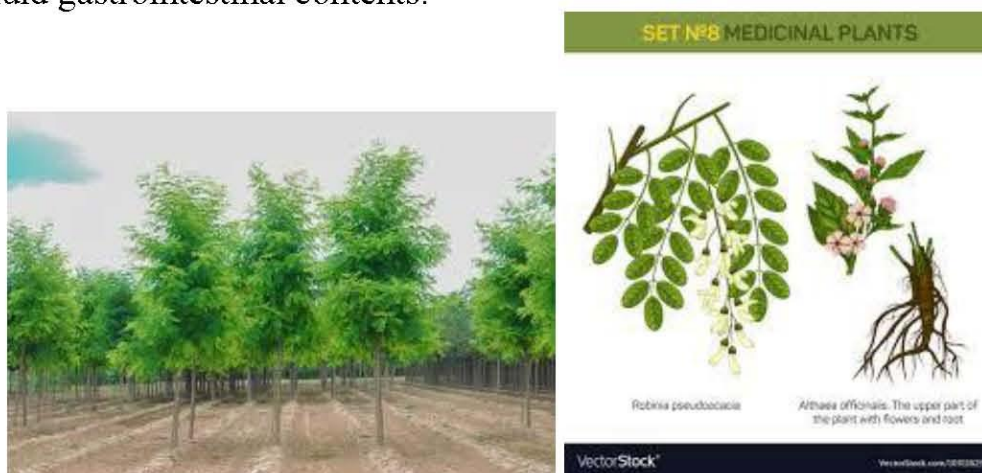
Parts of plant: Inner bark, rootsprouts, wilted leaves, or seeds.

Animals poisoned: human and all livestock.

Symptoms: Latent period for several hours. Wide stance; anorexia; lassitude; rapid, loud, and irregular heartbeat; rapid and shallow breathing; dilation of pupils; abdominal pain; bloody diarrhea, nervousness. Death is uncommon.

Treatment: Call a veterinarian at once. Correct hypovolemia and electrolyte imbalance.

Necropsy: Irritation and edema of mucous membranes of digestive tract. Fluid gastrointestinal contents.



• **Buxaceae - Boxwood Family**

***Buxus sempervirens* L. - Box, Boxwood شمشار**

Description: Evergreen shrub with dense, angular or winged twigs. Leaves small, opposite, simple, oval, dark green above and pale below, with a whitish midrib.

Habitat: Cultivated as a shrub or hedge. Livestock should be kept away from the hedge clippings.

Group number: 5. (Dangerous, but generally unavailable).

Poisonous principle: The alkaloid buxine, cyclobuxine and several related steroidal alkaloids

Parts of plant: Roots, leaves, bark, and twigs.

Animals poisoned: Cattle, sheep, horses, and swine. Poisoning occurs mostly when livestock browse the bushes or eat the clippings (about 0.15% animal weight.)

Symptoms: Emetic and purgative, may cause nervous symptoms and convulsions; contact dermatitis, initially exciting, later paralyzing and hypotensive, nausea, vomiting, dizziness, diarrhoea, spasms, with large amounts the symptoms may be intense abdominal pains, convulsions, and death due to respiratory failure.

Treatment: Nerve sedatives, respiratory and heart stimulants. Symptomatic. Consideration given to maintain respiration and circulation and to control convulsions.

Necropsy: Those of severe gastroenteritis.

Boxwood



Q1: Give the following data of Chenopodiaceae family (*Haloxylon* sp., *Haloxylon salicornicum* , *Suaeda fruticosa* L.) and give it as homework :

- Describe:
- Distribution:
- Hazardous Plant Parts:
- Active principle:
- Toxicity class:
- Mode of action, Symptoms