

## Checklist of Poisonous Plants and Animals in Aja Mountain, Ha'il Region, Saudi Arabia

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**Abstract:** The study was carried out to list the poisonous plants and animals in Aja Mountain. This area is located in the western part of Hail region (KSA) between Ha'il town and the Al-nafud desert. The data of 65 poisonous plants species is included in this study; these plants are belonging to 30 families represented by one species from Fungi group, one species from Thallophytes, five species belonging to three Monocotyledons plants and the remaining recorded species belongs to different Dicotyledons families. Information regarding their vernacular name, botanical name, family name, toxic parts and their symptoms are listed in this checklist. For the poisonous animals; the study revealed that, five species of the poisonous snakes were recorded at Aja Mountain (Ha'il). These snakes species belong to four families; *Malpolon moilensis* (Colubridae), *Atractaspis microlepidota engaddensis* (Atractaspididae), *Walterinnesia aegyptia* (Elapidae), *Cerastes gasperettii*, and *Echis coloratus* (Viperidae). For the scorpions, two species were recorded as poisonous animals belonging to the family Buthidae; *Leiurus quinquestriatus* and *Androctonus crassicauda*.

**Key words:** Checklist, poisonous, plants, animals, Aja mountain, Ha'il region, Saudi Arabia

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### INTRODUCTION

Aja mountain is situated between Ha'il town and the Al-nafud desert. It is the largest mountain in Hail Region. Aja mountain is relatively excellent area for pasturage over the years (Blunt, 1881). Due to intense grazing and unsustainable use of the region's resources, the area has changed into a less productive, with a few shrubs and trees (mainly *Acacia*) in wadis and foothills. However, the region's mountains housed a number of endemic and rare species, some of which are not present in any other part of Saudi Arabia.

In the case of poisonous plants, the term "poisonous" designates many kinds of reactions or effects. Among the key effects are allergic reaction that caused by spores, pollen grains, hairs, or naturally occurring volatile compounds, skin rashes or dermatitis caused by direct or indirect contact with allergenic or irritating compounds, skin photosensitization caused by exposure to irritating compounds and internal poisonings from ingestion of plants or plant parts. The general types of poisoning and examples of plants responsible for each were suggested by Pammel (2003), as follow: blood poisoning (wild cherry, *Prunus* spp.), nerve poisoning (mushrooms), cardiac poisoning (foxglove, *Digitalis purpurea*) and skin irritation (poison ivy, *Toxicodendron radicans*). The substances responsible for poisoning or toxic reactions originate from many different pathways within plants. However, most poisonous principles are considered be secondary metabolites or by-products from the essential functions of the plant (Westbrooks and Preacher, 1986). Although there are many theories as to why plants produce these nonessential compounds, of this theory that suggested by Douglas (2008), who said the plants have evolved to produce these compounds in order to deter animals from grazing on them and to keep out the insects from eating them.

Poisonous plants have always been part of daily life. In the nineteenth century, poisoning due to plants reached near epidemic levels as people often foraged for sources of food from natural plantings. All types of native and introduced plants can be poisonous including ferns, herbaceous plants, woody shrubs and trees (Douglas, 2008). Identifying plants that are poisonous is difficult since poisonous plants do not appear distinctly different from their nontoxic relatives or counterparts. Many poisonous plants have such unpleasant tastes that most adults don't chew them for very long before spitting them out. However, some poisonous plants are not distasteful and can even be sweet and, if eaten in large quantity, can cause serious problems.

In the case of animals; there are three types of venomous snakes: Opysthoglyph, Proteroglyph and Solenoglyph. The first type is mostly harmless or mildly venomous snakes. Their fangs are enlarged rear teeth with a groove that venom flows down while they are swallowing their prey. Proteroglyphs have small, fixed, non-movable front fangs. When they bite they hang on and chew their prey to envenomate it, like Cobras

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(*Naja*). They are some of the deadliest snakes in the world. Solenoglyphs have movable front fangs that fold back into the mouth until they are needed. These snakes are very dangerous for they can open their mouths almost 180 degrees with their fangs extended straight out. They can strike at any portion of the body and their attack is much unpredictable. Rattlesnakes (*Crotalus*), eyelash vipers (*Bothriechis*), gaboon vipers (*Bitis*), cottonmouths and copperheads (*Agkistrodon*) belong to this type (Ellenhorn, 1997).

Snake venom is modified saliva that is primarily used for hunting (capturing and digesting the prey). Some venom is hemotoxic (affecting the blood). It destroys tissues and causes great pain, swelling and thinning or thickening of the blood (Egan, 2007).

All species of scorpions are poisonous for their preys (mostly insects, for which they are always deadly) but a very small number can be dangerous to humans. The scorpion's venom is comprised of a variety of compounds, most of which have not been investigated. The venom from a single scorpion may include several neurotoxins, histamine, serotonin, enzymes, enzyme inhibitors, and other unidentified compounds. Each neurotoxin is believed to target specific kind of animals (Hendrixson, 2006).

Exposure to a variety of venomous animals, including snakes and scorpions, represents an environmental health risk in Saudi Arabia. High incidence rates have been reported in Hail region during the last few years. Apart from a few case reports, there are few published data on the epidemiology of snakebite or the clinical effects of envenomation in Saudi Arabia. Toxicity and composition of animal venomous within a species may vary geographically and seasonally (Minton and Minton, 1969).

The flora and fauna of Aja mountain in Hail region abounds with numerous plants and animals of interest to visitors. Many are for agricultural purpose, some for medicines and others for economic uses or variety of related uses. Amongst all of these plants and animals that life and grow in Aja mountain are several with poisonous properties.

This study deals with the checklist of poisonous plants and animals in Aja mountain (Ha'il region-Saudi Arabia) to fill the gap in this point due to the dearth of information about the poisonous plants and animals in this area.

## MATERIALS AND METHODS

### *i-Area of Study:*

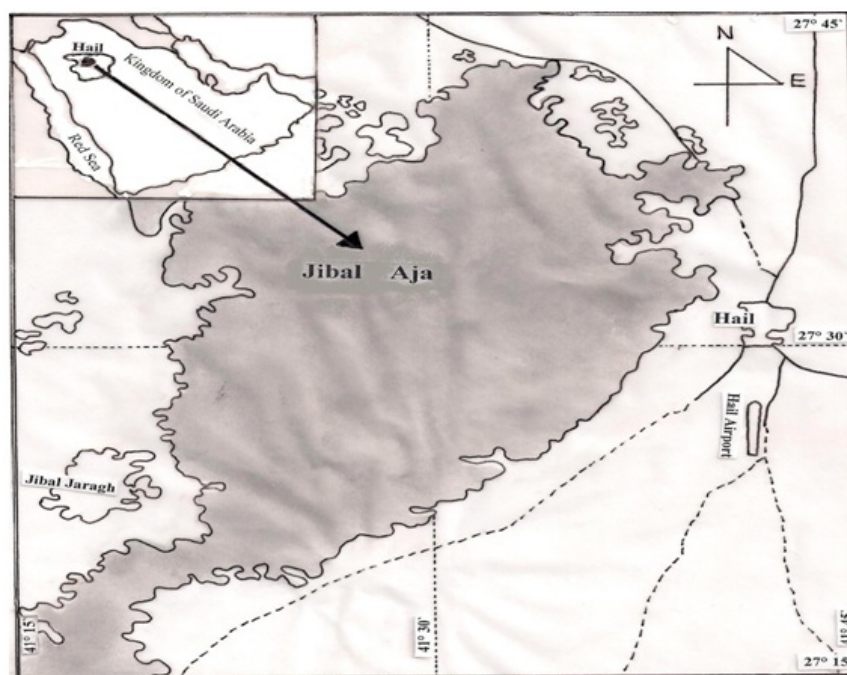
The study area is located in the western part of Ha'il region. It is located between 27° 13' & 27° 31'N and 41° 09' & 41° 35'E. It is an exposed complex of Precambrian igneous rocks, and is a part of the vast phanerozoic formations that overlap the northern and eastern edge of the Arabian Shield (Schultz & Whitney 1986). Aja mountain is made up of a reddish-grey granite (Schultz & Whitney 1986); with 110 km long, 1000 m high, and 5-35 km wide with a top point of 1350 m above MSL (Al-Turki and Al-Olayan, 2003).

The weather system in the Aja mountain is generally, arid to extra arid. It is influenced by two main pressures, namely Siberian high in winter and tropical low in summer months. The sun-rays as in other parts of Saudi Arabia are intense and seldom diffused by clouds. Summer temperatures typically rise as high as 50°C in the day time with diurnal variation of about 25°C. The wind in the study area comes from the north or northwest and is a great evaporative force hence causing immense physical damage. At certain times of the year, especially during spring, the wind builds up 4-5 days severe dust storms known as 'Shamals' in which air is full of grit (sand+silt) to a height of hundreds of meters (Al-Turki and Al-Olayan, 2003). The rainfall is erratic and irregular. The main source of precipitation comes from the winter cyclones originating from the Mediterranean Sea and the eastern Atlantic Ocean. Aja Mountain is far from sea, but it becomes wet in times of raining. The most dry months are September, till the mid of October (Schultz & Whitney 1986).

### *ii- Plants and Animals Collection:*

Regular field trips in different seasons were arranged in order to collect fully mature plants and animals (snakes and scorpions) from their natural habitats in Aja mountain of Ha'il region (Fig. 1). The plant specimens were identified according to Zohary (1972, 1996), Taekholm (1974), Migahid (1989, 1990), Mandaville (1990), Chaudhary (1983, 1989, 1999, 2000), Miller and Cope (1996), Al-Eisawi (1998), Collenette (1998, 1999) and Al-Turki and Al-Olayan (2003); while animals were identified according to Gasperetti (1988), Leviton *et al.* (1992) Hendrixson (2006) and Egan (2007).

The voucher specimens were deposited at the herbarium, while the collected snakes and scorpions were deposited at the animal museum of Faculty of Science, Ha'il University, Ha'il, Saudi Arabia. From the collected specimens the poisonous plants and animals were indicated and recorded according to local people, knowledgeable persons and many literatures. The checklist of the recorded poisonous plants and animals are given in Tables (1&2) respectively.



**Fig. 1:** Map of Aja Mountain; Ha'il Region

## RESULT AND DISCUSSION

Plants can differ by degree of toxicity and many references classify plants as extremely, moderately or minimally toxic (Stary and Berger, 1986; Pammel, 2003 and Douglas, 2008). However, it is difficult to categorize plants with regard to their toxicity since this varies with the age of the victim as well as other factors that influence levels of toxic principles in plants such as environment, stage of plant growth and health status of a person in relationship to the quantity of the plant ingested. (Westerfield and Wade, 2000). Many plants have known medical uses but if used in an incorrect way with large amounts will have a poisonous effect.

Douglas (2008) has classified poisonous principles into categories as follow; (1) Alkaloids: nitrogenous compounds which are complex, physiologically active, typically taste bitter, and are usually insoluble in water. (2) Glycosides: compounds produce one or more sugar (glycones) and one or more toxic glycones; they are usually colorless, bitter, crystalline solids. (3) Minerals: is associated with high levels of particular minerals in the soil or atmosphere and subsequently uptake by plants; levels of these minerals are accumulated in the plants such that they become toxic; among the minerals often associated with toxicity are lead, copper and arsenic. (4) Oxalate: these consist of soluble oxalates and oxalic acid; poisonings are attributed to small crystals of insoluble calcium oxalate which cause oral irritation when ingested. (5) Photosensitizing compounds: are psoralens which result in acute sensitivity of the skin to sun or other light sources after exposure. (6) Phytotoxins (Toalbumins): these compounds are toxic protein molecules that are similar to bacterial toxins in structure and reaction. (7) Polypeptides and Amines: are nitrogenous compounds such as phenylethylamine and tyramine. (8) Resins: are compounds that are often chemically very different but which share certain physical characteristics; these compounds melt or burn easily, are soluble in organic solvents, insoluble in water, and don't contain nitrogen.

Most of the larger groups of plants have within them certain species which are poisonous in varying degrees to human and animals. Gates (1930) gave a broad general view of the plant kingdom with some indication of the relative importance of the larger groups from a plant poisoning standpoint as follows: Thallophtes: Algae and Fungi, some are poisonous. Bryophtes: Liverworts and Mosses, none are recorded as poisonous. Pteridophtes: Ferns, a small number are poisonous; Equisetum, are poisonous and Lepidophtes, are not recorded as poisonous. Spermatophtes: Cycades, are not recorded as poisonous; Conifers, a small number are poisonous and Flowering plants, many are poisonous, this group is most important from the poisoning standpoint.

The data of 65 poisonous plants species is recorded in this study. These plants species belongs to 30 families represented by one species from Fungi group (*Podaxis pistillaris*), one species from Thallophytes (*Adiantum capillus-veneris* L.), five species belonging to three Monocotyledons plants (Alliaceae, Gramineae and Iridaceae) and the remaining recorded species are belonging to different Dicotyledons families. Information regarding their vernacular name, botanical name, family name (according to Engler and Prantle, 1931), toxic parts and their symptoms are listed in the checklist (Table 1). The poisonous constituents of the studied species and their main symptoms are taken from previous literatures (Kingsbury, 1964; Hardin and Arena.1974; Hilal and Youngken, 1984; Westbrooks and Preacher, 1986; Stary and Berger, 1995; Westerfield and Wade, 2000; El-Kahtany and El-Masry, 2005).

Some snakes of Saudi Arabia are venomous. Of the 54 species and subspecies that recorded by Gasperetti (1988), one half of them are poisonous. During the present study, five species of poisonous snakes were recorded at Aja mountain as in Table 2.

Snake venom is mixture of biologically active substances, most of which are enzymes or nonenzymatic polypeptides. These act in concert to cause the symptoms of snake venom poisoning. All contain phospholipase alone or in conjugated form. Some phospholipase have powerfull neurotoxic and myolytiv activity (Leviton *et al.*, 1992). Toxicity and composition of snake venoms within a species may vary geographically and seasonally. Quantitative and qualitative differences of the venom of the same species may occur in specimens collected in the same day on the same hilltop (Minton and Minton, 1969).

Two species of scorpion in Aja mountain were recorded as poisonous animals. Hendrixson (2006) found these species in different localities in Saudi Arabia. Sissom and Henrdixson (2005) compared scorpion diversities between select countries, including Saudi Arabia, and showed that it pales in comparison to a number of places of equal or lesser area.

**Table 1:** Checklist list of the poisonous plants in Aja Mountain, Ha'il region

Family name	Botanical Name	Vernacular name	Toxic plant parts	Symptoms
1-Podaxaceae	<i>Podaxis pistillaris</i>	El-Argoon, aaryoon	The mature black body	Poisonous formatting the width are alkaloids. Depending on amount consumed muscular cramps, diarrhea and abdominal pains may ensue (Westbrooks and Preacher, 1986).
2-Adiantaceae	<i>Adiantum capillus-veneris</i> L.	Kozbaarit el-beer, Sha'ar el-bannat, Sha'ar el-agooz	Mature fronds	Large quantities can cause destroys vitamin B1. Symptoms include weight loss, weakness, eventual death (Westerfield and Wade, 2000).
3-Aizoaceae	<i>Aizoon canariense</i> L.	Hadaq, a'daa, Koshed el- belaad, Semeh, Shammar, Rawalah	Flowers and fruits	Contains poisonous alkaloids. Depending on amount consumed, irritations of mucous membranes, cramps and paralysis, including respiratory paralysis may ensue (Kingsbury, 1964).
4-Alliaceae	<i>Allium stamineum</i> Boiss.	Botteit, Ze'itmaan, Senn el-ghazaal, Kurrayth,	The whole plant	Contains volatile oil rich in sulphurated compounds and saponins. In animals the main symptoms are anemia and jaundice. The plant produces a depressing effect on the heart (Hilal and Youngken, 1984).
	<i>Aerva javonica</i> (Burn.) Spreng.	Ra, Tuwaym, Elghaab, Ghell, Toorf, Araa, Yaraa, Shagaret el-ghazaal	The whole plant	Contains cardiac glycioids. If eaten specially fruits cause irritation and stomach pain resulting in nausea, vomiting and muscular weakness. Severe poisoning results in rapid irregular pulse, delirium, convulsions and death due to heart failure (Westbrooks and Preacher, 1986).
5-Amaranthaceae	<i>Amaranthus graecizans</i> L.	Fiss el-kilaab	The whole plant	Symptoms suddenly appear 5 to10 days after animals consume plants. It causes weakness, trembling, in coordination symptoms of knuckling to paralysis and coma followed by death. It also causes degeneration of the brain and edema in the kidney region with degeneration of the kidney tubules (Westbrooks and Preacher, 1986).
6-Apocynaceae	<i>Rhazya stricta</i> Decne.	Harmal	The whole plant	Contains poisonous alkaloids (Rhazine, Quebrachamine, Eburnaminie, Rhazidine and flavonoids. Depending on amount consumed muscular cramps, difficult breathing and abdominal pains may ensue (El-Kahtany and El-Masry, 2005).
	<i>Calotropis procera</i> Ait	Ushar, Ushary, Osher, Oshmor	The whole plant especially the latex (juice)	Main constituents are four glycosides known as calotropin, calotoxin, usharin and usharidin. The latex is irritating to the skin, especially the eyes, producing redness and inflammation. The milky juice is said to produce abortion in camels which feed upon its stems and leaves (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
7-Asclepiadaceae	<i>Pergularia tomentosa</i> L.	Ghalqah, Atma, Laban el-homaara, Omm el-laban, Dimish el-ghalq, El-ghazala	The whole plant especially the latex (juice)	Poisonous principles are digitalis-like glycosides, asclepin and vincetoxin. The latex causes stomach pain, nausea, vomiting followed by purgation, slow pulse, disordered vision, drowsiness and muscular weakness, Severe poisoning results in rapid irregular pulse, convulsions and death due to heart failure (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).

Table 1: continued

	<i>Solenostemma argel</i> (Del.) Hayne.	Hargel, Argel, Khargel, Herdjel, Farongoon, Harmel	The whole plant especially the latex (juice)	The latex is irritating to the skin, especially the eyes, producing redness and inflammation (Hilal and Youngken, 1984).
	<i>Gomphocarpus sinaicus</i> Boiss.	Gheil, Ghalqit ed-dwwb, Hargal, Houb	The whole plant especially the latex (juice)	The latex causes stomach pain, nausea, vomiting, slow pulse, disordered vision, drowsiness and muscular weakness (Hilal and Youngken, 1984).
	<i>Periploca aphylla</i> Decne	Silaangoab, Sileeh, Sleeh, Seleekh	The whole plant especially the latex (juice)	The latex causes constipation, obstivity, and tumors. Also is irritating to the skin, especially the eyes (Hilal and Youngken, 1984).
8-Boraginaceae	<i>Anchusa aegyptiaca</i> (L.) DC.	Daboon, Dahhoon, Shobbeit, Kahil, Kahla	The whole plant	Its cause abdominal pains and skin irritation and inflammation (Stary and Berger, 1995).
	<i>Arnebia decumbens</i> (Vent.) Coss.et Kral.	Attan, Kahil, Kahal,	The whole plant especially the root	Poisonous principles are pyrrolizidine alkaloids. The main symptoms are digestive upset and liver damage; skin irritation from the coarse hairs (El-Kahtany and El-Masry, 2005).
	<i>Echium rauwolfii</i> Del.	Kahla, Kahly, Hinna el-ghool, Keideh	The whole plant especially the root	Toxicity is the same as for <i>Arnebia decumbens</i>
	<i>Heliotropium ramosissimum</i> (Lehm.) DC.	Ranram, Ghobberia, Ghobairaa, Raha, Rahab, Rahaaba	The whole plant	Poisonous principles are pyrrolizidine alkaloid. Its cause digestive upset and liver damage (Hilal and Youngken, 1984).
	<i>Trichodesma africanum</i> (L.) R.Br.	Hameem, Lisaan et-teir, Himhim, Horraaqa, Horriq, Khodaar, Tadatt, Shana, Losseiq, Lossaaq	The whole plant	Its toxic alkaloids and saponins cause damage to the liver of animals, also producing muscular spasm, difficult breathing and partial muscular degeneration (Hilal and Youngken, 1984).
9-Capparaceae	<i>Capparis spinosa</i> L.	Shafella, Lassaaf, Shafallah, Melath	The fruits and seeds	Large quantities can cause weakness; abdominal pain, salivation, and diarrhea (Hilal and Youngken, 1984).
10-Chenopodiaceae	<i>Chenopodium murale</i> L.	Uwayjiman, Lissan et-tier(et-thor), Shekraan, Qehaniya, Fiss el-kelaab, Shagaret el-mottenia, Zorbeih	The whole plant	Large quantities can cause interference with calcium metabolism in the body and possible phototoxicity (Hilal and Youngken, 1984).
11-Cleomaceae	<i>Cleome amblyocarpa</i> Barr. et. Murb.	Khunnayza, Durrayt An-na-am, Ufaymah, Shiddiq el-kalb, Magnoona, Shagaret wahash	The whole plant especially the fruit and seeds	Poisonous principles are alkaloids and others. It causes fever, rapid pulse, dilation of pupils, hot and dry flushed skin, headache, dry mouth, difficulty of swallowing, burning of the throat, hallucinations, and convulsions (Hilal and Youngken, 1984; Westerfield and Wade, 2000 and El-Kahtany and El-Masry, 2005).
12-Compositae	<i>Achillea fragrantissima</i> (Forssk.) Sch.	Qaysum, Gesoom, Alegiaan, Be'eithraan	The whole plant	Mucous membrane contact with the plant causes irritation and inflammation. Gastrointestinal upset including diarrhea may occur (Westerfield and Wade, 2000).
	<i>Artemisia judaica</i> L.	Sheeh, Buiaythiran	The leaves and flowering tops.	Poisonous principles are aromatic oils containing thujone. If eaten in large quantities it causes rapid, feeble pulse, severe inflammation of the stomach lining, violent spasms, convulsions and severe personality changes. Skin contact can cause dermatitis (Kingsbury, 1964).
	<i>Coryza bonariensis</i> (L.) Cronquist	Hasheesh el-gabel, Zibl el-faar, Ain el-katkoot, Halook baladi	The whole plant	If eaten in large quantities is caused low blood pressure nausea, high temperature and dryness of the mouth (Kingsbury, 1964).
	<i>Gymnarrhena micrantha</i> Desf.	Kaff Al-kalb, Khirisheif	The whole plant	Death for grazing animals can occur through respiratory failure if large doses are ingested (Kahtany and El-Masry, 2005).
	<i>Senecio glaucus</i> L.	Zumluq, Kura 'Al-ghurab, Jirjir, Qorries, Omm lonein	The whole plant	It causes liver lesions, enlarged liver, abdominal pain, weakness, staggering and death. Usually only eaten in hay or when wilted. Drying or storage doesn't destroy toxins. (Hilal and Youngken, 1984).
13-Convolv ulaceae	<i>Convolvulus arvensis</i> L.	Fadakh, Khatmi, Olleiq, Medaad, Motteit	The whole plant	It contains resins coumarins and alkaloids. All plant parts cause severe purgation and abdominal pain (Hilal and Youngken, 1984).
	<i>Cuscuta</i> spp.	Suyah, Hamool	The whole plant	If eaten in large quantities is caused general weakness and abdominal pains (Hardin and Arena.1974).
14-Cruciferae	<i>Brassica tournefortii</i> Gouan.	Khafsh, Huraysha, Suffayr, Shiltaam, Shirtaam	The whole plant especially the seeds	Members of the mustard family contain isothiocyanates, commonly called mustard oils. Symptoms are primarily those of a severe gastroenteritis due to irritation of the mucous membranes. Abdominal pain, salivation, and diarrhea are commonly seen. Rape, a winter annual, often causes a series of problems including pulmonary emphysema, diarrhea, blindness, and hemoglobinuria. Photosensitization can occur in swine and light-skinned animals. Abortions can occur in sows (Hilal and Youngken, 1984).
15-Cucurbitaceae	<i>Citrullus colocynthis</i> (L.) Schard.	Handal, Hanzal, Tattoor,	The whole plant especially the fruit pulp	Poisonous principles are resins, as well as glycosides yielding cucurbitacins on hydrolysis. The plant causes severe abdominal pains and water stool (Hardin and Arena.1974; Hilal and Youngken, 1984; Westerfield and Wade, 2000 and El-Kahtany and El-Masry, 2005).
	<i>Cucumis prophetarum</i> L.	Heneidlaan, Henedlai, Hanadlaan	The whole plant especially the fruit	Toxicity is the same as for <i>Citrullus colocynthis</i> .

Table 1: continued

16-Euphorbiaceae	<i>Euphorbia granulata</i> Forssk.	Melbanah, Heleebah, Abolabin, Leban	The whole plant especially the milky juice	The toxic principles include terpenes, triterpenoids, glycosides and phenolics present in the milky juice. All parts of these plants or the milky latex exuded from them can cause an inflammation or irritation when in contact with the skin. If eaten by animals, the plants may cause vomiting and severe purgation (Hilal and Youngken, 1984; Westerfield and Wade, 2000 and El-Kahtany and El-Masry, 2005).
	<i>Euphorbia peplus</i> L.	Shagaret-el-hanash, Ma'laquah, Zorreyah, Sabun gheyt, Wideina	The whole plant especially the milky juice	Toxicity is the same as for <i>E. granulata</i> .
	<i>Euphorbia retusa</i> Forssk.	Nomaniya, Melbeyn	The whole plant especially the milky juice	Toxicity being the same as above the two species.
	<i>Ricinus communis</i> L.	Kharwaa	The seeds	The toxicity of the seeds is due to ricin, it also contains the alkaloid ricinine. The seeds are poisonous to humans, cattle, horses, sheep and poultry. Symptoms are nausea, vomiting, gastric pain, diarrhea, thirst and dullness of vision. In humans, ingestion of large amounts at a time causes general weakness followed almost immediately by collapse. In animals, severe poisoning from eating large quantities end in convulsions and death (Hardin and Arena, 1974; Hilal and Youngken, 1984; Westerfield and Wade, 2000 and El-Kahtany and El-Masry, 2005).
	<i>Chrozophora tinctoria</i> (L.) A. Juss. ex. Spreng.	Ghobeira, Neeli, Qoddah, Koddah,	Fluffy hairs and milky juice	If eaten, plant parts cause burning sensations in throat, thirst, coughing and later stomach pain, nausea and vomiting. Can also cause an inflammation or irritation when in contact with the skin (Hilal and Youngken, 1984).
	<i>Andrachne aspera</i> Spreng.	Thab el-faar, Ood el-aqrab, Areq, Libbein	The whole plant	Poisonous principles are alkaloids and cyanogenic glycoside. If eaten in large quantities are cause Diarrhea and vomiting (El-Kahtany and El-Masry, 2005).
17-Gramineae	<i>Aristida plumose</i> L.	Abu rokba, Sabat, Safsoof, Qaba,	The whole plant	The plant causes dizziness, headache, vomiting, difficult breathing, cardiac arrhythmia, coma and convulsions (El-Kahtany and El-Masry, 2005).
	<i>Lolium perenne</i> L.	Gazoon, Hasheesh el-faras, Samma, Zuwan	Wild annual grass seed.	It can cause mouth burning, vomiting and dizziness for animals (Hilal and Youngken, 1984).
18-Iridaceae	<i>Gynandiris sisyrinchium</i> Parl.	Unsayl, Aankood, Kheita, Zambaq	The whole plant especially the rhizomes	Gastrointestinal irritant. Digestive upset, abdominal pain, nausea, vomiting, diarrhea and fever (El-Kahtany and El-Masry, 2005).
19-Leguminosa	<i>Cassia italica</i> (Mill.) Lam. ex. Steud	Sana, Smaleika, Sherqaan, Ishriq, Shajarat ad-dabb	The whole plant especially the fruit and seeds	Poisonous principles are Anthraquinones, emodin glycosides, toxalbumins, alkaloids If eaten in large quantities are cause diarrhea, remors, and dark brown urine. The plant juice is said to produce abortion in the animals (Westerfield and Wade, 2000).
	<i>Medicago laciniata</i> (L.) Mill.	Nafal, Hasak, Husaykah, Medad	The whole plant	Vomiting, salivation, nausea, dizziness, headache and abdominal pain. Slow breathing and heartbeat may occur (Stary and Berger, 1995).
	<i>Melilotus officinalis</i> L.	Handaqooq	The whole plant	Symptoms are related to massive blood loss. Swellings appear under the skin due to accumulations of blood. These swellings vary in size and may occur at any site on the body but particularly in areas that are susceptible to bruising. Other symptoms can include pale mucous membranes, rapid and weak pulse, and weakness. Females may hemorrhage following calving. Occasionally animals hemorrhage internally and exhibit signs of shock (Hilal and Youngken, 1984).
20-Liliaceae	<i>Asphodelus refractus</i> Boiss.	Barwaq, Bayraq,	The whole plant especially the inflorescences and fruits	If eaten in large quantities are cause diarrhea and abdominal pain (Stary and Berger, 1995).
21-Myrtaceae	<i>Eucalyptus</i> spp.	Kafoor	The leaves and bark	Contains Eucalyptus oil and cyanogenic glycoside cause nausea, vomiting, diarrhea, coma. Skin redness, irritation, and burning from handling leaves and bark. Eucalyptus oil is extremely toxic if eaten (Stary and Berger, 1995).
22-Orobanchaceae	<i>Cistanche</i> spp.	Dhanun, Basul,	The whole plant Halook, Toorfaas	Large quantities can cause general and weakness, abdominal pain, salivation, abdominal inflammation (Stary and Berger, 1995).
	<i>Orobanche</i> spp.	Halook, Dawaneen, Dawaleel	The whole plant	Toxicity is the same as for <i>Cistanche</i> .
23-Papaveraceae	<i>Papaver rhoeas</i> L.	Deydahaan, Zagheel	The whole plant especially the fruit and seeds	Causes a narcotic overdose and depression of parasympathetic systems, stupor and coma. Death can occur through respiratory failure if large doses are ingested (Hilal and Youngken, 1984).
	<i>Roemeria hybrida</i> (L.) DC.	Hassar, Bakhatri,	The whole plant especially the fruit and seeds	Toxicity is the same as for <i>Papaver</i> .
24-Primulaceae	<i>Anagallis arvensis</i> L.	Ein el-Kot, Kanfouda, Saboun el-Gheit, Ein El-Arab, Ein El-Gamal, Loubeek	The whole plant	Contains saponins (cyclamen) cause death among live stock, intense headache, skin irritation and stomach pain may result in humans (Hilal and Youngken, 1984).

Table 1: continued

25-Resedaceae	<i>Occhradenus baccatus</i> Del.	Qirdi, Quradi, Alqa, Garthy, Thanabaan	The whole plant	If eaten in large quantities are cause Diarrhea and vomiting (Westerfield and Wade, 2000).
26-Rutaceae	<i>Haplophyllum tuberculatum</i> (Forssk.) A. Juss.	Musaykah, Zuqayqah, Furaythah, Ziffrah, Mesk el-bar, Shagaret er-reeh	The whole plant	The plant is said to produce abortion in camels which feed upon its stems, leaves and flowers (Stary and Berger, 1995).
27-Scrophulariaceae	<i>Verbascum sinaiticum</i> Benth.	Kharmar, Kherwa, Widaan el-homaar, Aathan el-'eer, Awarwar	The seeds	Poisonous principles are saponins. Cause irritation and stomach pain resulting in nausea, vomiting and muscular weakness (Stary and Berger, 1995).
28-Solanaceae	<i>Datura stramonium</i> L.	Datoora, Semm El-Faar,	The whole plant Nefeer, Tatoora	Poisonous principles are the alkaloid hyoscyamine and traces of atropine and hyoscine. Symptoms include headache, nausea, vertigo, extreme thirst, dry burning sensation in the skin, general nervous excitation, and dilated pupils, loss of sight and voluntary motion, palpitation of the heart; in extreme cases, mania, convulsions and death (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
	<i>Hyoscamus muticus</i> L.	Egyptian Sakaran, Sakaran	Entire plant, particularly the roots and seeds.	Poisonous principles are atropine-like alkaloids. All parts, if ingested or handled, are poisonous especially to eyes causing impaired vision, and severely widened pupil of the eyes on contact; if eaten, plant parts may cause intense thirst, a rapid beating of the heart, very warm and reddened skin, mental confusion, weakness, convulsions, coma, death resulting (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
	<i>Solanum nigrum</i> L.	Shajarat Al-balbul, anab el-deeb, Bandooret deeb	The whole plant especially the fruit and seeds	Two syndromes have been described: acute and chronic. The acutely poisoned animal is characterized by irritation of the mouth and gastrointestinal lesions. In the chronic form, characteristic symptoms are unthriftiness, jaundiced mucous membranes, abdominal dropsy, and constipation (Hilal and Youngken, 1984).
	<i>Withania somnifera</i> (L.) Dun.	Semm el-firaakh, Semm el-faar, Shagaret el-ghoraab, Haml balbul, Fakeesh	The whole plant especially the fruit and seeds	It can cause rapid heartbeat, dilatation for the pupils, dry flushed skin and elevated temperature. In large amounts, hallucination, muscle weakness and paralysis can occur (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
29-Urticaceae	<i>Frosskalea tenacissima</i> L.	Losseiq, Lesseq, Lossaaq	The whole plant	The entire plant especially on contact with its stinging hairs causes skin irritation, several rashes with itching sensation, called urticaria (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
30-Zygophyllaceae	<i>Peganum harmala</i> L.	Khiyyays, Shajarat Al-khunayzir, Harmal, Haramlaan, Khardal abiad	The whole plant especially the fruit and seeds	Poisonous constituents include the alkaloids peganine, harmine and harmaline. It causes nausea, and vomiting. Also it may cause severe inflammation and swelling of tissues (Hilal and Youngken, 1984 and El-Kahtany and El-Masry, 2005).
	<i>Fagonia cretica</i> L.	Shoka'a, Halaawa, Gamda, Aqool el-ghazaal, Shoakaan, Showeika	The whole plant	It contains toxic alkaloids, saponins and triterpenoids. All parts of the plant are toxic causing upon ingestion nausea and vomiting owing to irritant principles; occasionally necrosis results. The plant is said to cause abortion in pregnant animals (Hilal and Youngken, 1984).
	<i>Fagonia glutinosa</i> Del.	Umm at-turab, Medeiheena	The whole plant	Toxicity is the same as for <i>F. cretica</i> .
	<i>Fagonia indica</i> Burm.	Durayma, Hulaywah,	The whole plant	Toxicity being the same as above the two species.
	<i>Tribulus longipetalus</i> Viv.	Zahr, Katob, Qoyoob, Gathan	The whole plant especially the fruit and seeds	It contains standard alkaloid extraction, beta-carboline indoleamines harmine and norharmine. Both compounds cause limb paresis and affect the central nervous system (Kingsbury, 1964).
	<i>Tribulus terrestris</i> L.	Shirshir, Duraysah, Qatb, Baol, Shiqshiq, Dreiss, Kharshoom, Daqn el-sheikh	The whole plant especially the fruit and seeds	Toxicity is the same as for <i>T. longipetalus</i> .
	<i>Zygophyllum coccineum</i> L.	Ratryat, Tarteer, Bauwal, Bizzel-Melkian	The whole plant	The principal constituents are zygophyllin bitter principle, saponins, harman and harmine alkaloids. The entire plant is poisonous to animals and humans causing nausea, vomiting, later cardiac inhibition and depression. It also produces a remarkable decrease in blood pressure followed by coma and death (Hilal and Youngken, 1984).
	<i>Zygophyllum simplex</i> L.	Garmal, Qarmal,	The whole plant	Toxicity is the same as for <i>Z. coccineum</i> .

**Table 2:** Checklist list of the poisonous animals in Aja Mountain, Ha'il region

Group	Family	Species	Distribution	Toxins and symptoms	References	
		Scientific name	Common name			
SNAKES	Coluberidae	<i>Malpolon moilensis</i> (Reuss, 1834)	Hooded malpolon, Arabian Montpellier snake, False cobra, Moila snake, Hooded Montpellier snake, and Arabian rear-fanged snake	Saudi Arabia, Mediterranean Coastal Desert of Egypt and Coastal Desert of Egypt and to Egypt, South to Sudan, Jordan, Syria, Iraq, Iran, the Arabian Peninsula, and Ghana	Most colubrids are non-venomous or mildly venomous constrictors.	Gasperetti (1988)
	Atractaspididae	<i>Atractaspis microlepidota engaddensis</i> Haas, 1950	Mole Viper	Palestine, Sinai, Jordan, SW/C Saudi Arabia, Jordan, and Lebanon	Highly neurotoxin venoms. The venom consists of numerous components, the major ones, the sarafotoxins, being characteristic of this group of snakes. The local effects are oedema, haemorrhagic vesicles Chajek, T. and Gunders, A. E., 1977. Clinical and biochemical observations following bites of <i>Atractaspis engaddensis</i> . <i>Rofe Hamishpaha</i> 7, pp. 119-122.	Gasperetti (1988) and Leviton <i>et al.</i> (1992). Kochva <i>et al.</i> , 1993
	Elapidae	<i>Walterinnesia aegyptia</i> Lataste, 1887	Desert Black Snake or Desert Cobra	Northwestern Saudi Arabia, Egypt, I Palestine, Jordan, and probably Syria	Their venoms contain a polypeptide neurotoxin with postsynaptic paralytic action at the neuromuscular junction.	Gasperetti (1988) and Ugurtas <i>et al.</i> (2001)
	Viperidae	<i>Cerastes gasperettii</i> Schätti & Gasperetti, 1994	Horned desert viper and greater cerastes.	Morocco, Western Sahara, Mauritania and Mali, Algeria, Tunisia, Niger, Libya and Chad to Egypt, Sudan, Ethiopia and Somalia, through Sinai to the northern Negev of Palestine. In the Arabian Peninsula, it occurs in Yemen and extreme southwestern Saudi Arabia.	It contains the most toxic venoms to humans. Their venoms contain endopeptidases and argentine esterhydrolases which contribute to their hypotensive, hemorrhagic and necrotizing activities.	Gasperetti (1988)
		<i>Echis coloratus</i>	Painted saw-scaled viper, painted carpet viper, Burton's carpet viper, Palestine saw-scaled viper, Arabian saw-scaled viper, Mid-East saw-scaled viper.	Found in the Middle East in Sinai, Palestine, Jordan. On the Arabian Peninsula: Saudi Arabia, Yemen and Oman.		Gasperetti (1988) and Alshammari, (2007)
SCORPIONS	Buthidae	<i>Leiurus quinquestriatus</i> Ehrenberg, 1829	Omdurman scorpion and Israeli desert scorpion	Widely distributed throughout North Africa and the Middle East, especially many localities in Saudi Arabia, Yemen, Emirates and Oman.	Highly dangerous species because its venom is a powerful cocktail of neurotoxins. While a sting from this scorpion is extremely painful, it would never kill an otherwise healthy, adult human. However, young children, the elderly, or infirm (such as those with a heart condition or those who are allergic) would be at much greater risk.	Sissom & Hendrixson Vand Hendrixson (2006).
		<i>Androctonus crassicauda</i> (Olivier, 1807)	Fattail scorpion or fat-tailed scorpion	Known from several localities in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Sinai, Iran, Iraq, Palestine, Jordan, Kuwait, Oman, Syria, United Arab Emirates, and Yemen.	It is one of the most dangerous groups of scorpions in the world. Their venom contains powerful neurotoxins and is especially potent. Stings are known to cause several human deaths each year.	Sissom & Hendrixson (2005) and Hendrixson (2006).

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