

## Nutritional and Ethnomedicinal Potential Plants of the Qur'an: An Overview -VII Evaluation

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### Abstract

Our ancient literatures of Hindus', Muslims as well as of Cristian's are full of plants described about their nutritional and medicinal potential. A significant number of plants described in their texts are still unidentified because of least or no interest in plant taxonomy among neither graduate scientists in well-developed different organisations nor respected teachers of Universities or Colleges of repute. We can say with confidence that there are no teachers who can teach Plant Taxonomy in significant numbers of academic institutions. A man of Biotechnology can do nothing if he/she cannot identify the plant on which the work has to be worked out. As a result, due to non-identification of plants we cannot use our wealth of knowledge which has been provided by our ancestors present in form of scripts.

We were presented a book written by Dr. M.I.H. Farooqi entitled "QuruaniPoudhe-VagayanicDhristi Se" while in Seminar organised by UP Biodiversity Board, Lucknow. We found that there are seventy-one plants being reported in Holy Qur'an and Bible. We have consulted the literatures available as well as the tribal of Bahraich about the uses of the plants available. The perusal of the alphabetical list of plants of Holy Qur'an reveals that there are 71 plant species representing 48 genera of 30 families. Brassicaceae, Cucurbitaceae and Moraceae family were found to be the biggest family represented by 6 plant species each whereas Caesalpiniaceae, Papilionoideae and Poaceae with 5 plant species each; Rosaceae and Rhamnaceae with 4 plant species; Mimosaceae, Liliaceae, Pinaceae, Euphorbiaceae, Oleaceae, Lytharaceae, Lamiaceae and Arecaceae with 2 plant species and rest fourteen species viz., Malvaceae, Asclepidiaceae, Lauraceae, Bixaceae, Dipterocarpaceae, Juglandaceae, Cupressaceae, Lecnoraceae, Lorantheaceae, Anacardiaceae, Sterculiaceae, Ericaceae, Salvadoraceae, and Vitaceae is being represented by single plant species each.

**Keywords:** Ethnobotanical; Ethnomedicinal; Potential; Plants; Qur'an.

## Introduction

Herbal Medicine is the oldest form of medicine known to mankind. It was the mainstay of many early civilizations and still the most widely practiced form of medicine in the world today, Ethnobotany is one of the most interesting themes of economic botany which might have first of all came into the existence probably when earliest man of "stone age" observed the animals mostly the apes and monkeys eating certain plants or plant parts ex. Fruits, leaves and even inflorescences to satisfy their hunger. Therefore, on the basis of plants usage first of all by animals and later on by the human beings the concepts of Ethnobotany and Ethnozoology were evolved, which merged into a common term known as Ethnobiology. However, the term Ethnobotany was first of all used in the last of 19th century by J. W. Harsh Berger (1895) to indicate the interrelationship of plants with aboriginal people or tribal societies [Trivedi and Sharma, 2011]. In many parts of the world, wild plants are obtained from forests or wild areas designated for extractive resources and managed by local communities [Jadhav et al., 2011]. Wild edible plants provide food quantity as well as medicines [Patale et al., 2015].

India is one of the twelve mega-biodiversity countries of the World having rich vegetation with a wide variety of plants. As per the 2001 census, the tribal population of India is 8.43 crore, constituting 8.2% of total population of the country [Annual Report, 2005-2006]. With enormously diversified ethnic groups and rich biological resources, India represents one of the great emporia of ethnobotanical wealth [Pal, 2000]. Even today, tribal's and certain local communities in India still collecting and preserving locally available wild and cultivated plant species for their day today life [Mahishi et al., 2005 and Ayyanar et al., 2010].

We were presented a book written by Dr. M.I.H. Farooqi entitled "Qur'ani Poudhe-Vagayanic Dhristi Se" while in Seminar organised by UP Biodiversity Board, Lucknow. We found that there are seventy-one plants being reported in Holy Qur'an and Bible. We have consulted the literatures available as well as the tribal of Bahraich about the uses of the plants available. The perusal of the alphabetical list of plants of Holy Qur'an reveals that there are 71 plant species representing 48 genera of 30 families. Brassicaceae, Cucurbitaceae and Moraceae family were found to be the biggest family represented by 6 plant species each whereas Caesalpinaceae, Papilionoideae and Poaceae with 5 plant species each; Rosaceae and Rhamnaceae with 4 plant species; Mimosaceae, Liliaceae, Pinaceae, Euphorbiaceae, Oleaceae,

Lytharaceae, Lamiaceae and Arecaceae with 2 plant species and rest fourteen species viz., Malvaceae, Asclepiadiaceae, Lauraceae, Bixaceae, Dipterocarpaceae, Juglandaceae, Cupressaceae, Lecnoraceae, Loranthaceae, Anacardiaceae, Sterculiaceae, Ericaceae, Salvadoraceae, and Vitaceae is being represented by single plant species each. We have enumerated five plants viz., *Acacia nilotica*, *Acacia senegal*, *Acacia seyal*, *Alhigimaurosum* and *Allium cepa* in first part and eight plants viz., *Allium sativum*, *Astragaluhadscendens*, *Bombax ceiba*, *Brassica arabica*, *Brassica juncea*, *Brassica nigra*, *Brassica rapa* and *Brassica schimperii* in second part, in third part seven plants viz., *Butea monosperma*, *Calotropis gigantean*, *Cedruslibani*, *Cedrusdeodara*, *Ceratonia siliqua*, *Cinnamomumcamphora* and *Citrullus colocunthis*, in the fourth part eight plants viz., *Cochlospermumreligiosum*, *Cucumis melo*, *Cucumis utilisimus*, *Cucurbita pepo*, *Cydonia vulgaris*, *Dryobalamopsaromaticum*, *Euphorbia resinifera* and *Ficusbenghalensis*. and in fifth part nine plants viz., *Ficus carica*, *Ficuselastica*, *Ficus racemose*, *Ficus religiose*, *Ficusrumphi*, *Fraxinus ornus*, *Hordeum vulgare*, *Juglans regia*, *Juniperusoxycedrus*. In the sixth part we have enumerated fourteen plants viz., *Lagenariasiceraria*, *Lagenaria vulgaris*, *Lawsonianermis*, *Lacanoraaffinis*, *Lens culinaris*, *Lens esculenta*, *Loranthus acacia*, *Ocimumbasilicum*, *Ocimum sanctum*, *Olea europaea*, *Panicum miliaceum*, *Phoenix dactylifera*, *Phoenix Sylvestris* and *Pistacia vera*. In the present seventh part we are enumerating nine plants viz., *Prunus armeniaca*, *Pterocarpus acerifolium*, *Punicagranatum*, *Rhododendron arboretum*, *Ricinus communis*, *Rosa phoenicia*, *Rosa damascene*, *Salvadorapersica* and *Seteria italica*. The present review is an attempt to compile most of the information available regarding the distribution, ethnobotanical, ethnomedicinal and non-medicinal uses of the plants. The manuscript contains information's obtained from authentic and highly regarded sources. Reasonable efforts have been made to provide reliable data and information, but the author cannot assume responsibility for the validity of all materials or the consequences of their use.

### Enumerations:

*Prunus armeniaca* Linn. Apricot (Rosaceae):

Synonyms

*Armeniaca vulgaris*

*Prunus armeniaca* is a deciduous Tree growing to 9 m by 6 m at a medium rate. It is not frost tender. It is in flower from March to April, and the seeds ripen from July to September. The species is hermaphrodite

and is pollinated by Insects. The plant is self-fertile. Suitable for: light (sandy) and medium (loamy) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers moist soil.

This species produces hydrogen cyanide, a poison that gives almonds their characteristic flavour. This toxin is found mainly in the leaves and seed and is readily detected by its bitter taste. Usually present in too small a quantity to do any harm, any very bitter seed or fruit should not be eaten. In small quantities, hydrogen cyanide has been shown to stimulate respiration and improve digestion, it is also claimed to be of benefit in the treatment of cancer. In excess, however, it can cause respiratory failure and even death. Oral doses of 50g of hydrogen cyanide can be fatal [Karalliedde and Gawaremmana, 2008].

Most trees growing apparently wild have escaped from cultivation but there are pure stands of the trees in Tibet on mountain slopes in sparse forests at elevations of 700 - 3000 metres [Flora of China, 1994]. The range of its occurrence is East Asia - North China, Mongolia.

#### ***Ethnobotanical Potential***

Fruits are consumed raw, cooked or dried for later use [Chittendon, 1956; Hedrick, 1972; Simmons, 1972; Harrison et al., 1975].

The best forms are soft and juicy with a delicious rich flavour [Fern, K].

Wild trees in the Himalayas yield about 47.5kg of fruit per year [Parmar and Kaushal, 1982]. The fruit of the wild form contains about 6.3% sugars, 0.7% protein, 2.5% ash, 2.5% pectin. There is about 10mg vitamin C per 100g of pulp [Parmar and Kaushal, 1982].

The fruit is about 5cm in diameter and contains one large seed [Huxley, 1992]. Seed - raw or cooked [Facciola, 1990].

Bitter seeds should be eaten in strict moderation, but sweet ones can be eaten freely [Bianchiniet al.,]. The bitter seeds can be used as a substitute for bitter almonds in making marzipan etc [Grieve, 1984].

An edible gum is obtained from the trunk [Howes]. The seed contains up to 50% of an edible semi-drying oil [Grieve, 1984; Schery, Plant for Man; Usher, 1974; Facciola, 1990].

An edible semi-drying oil is obtained from the seed [Schery, Plant for Man]. Used for lighting [Parmar and Kaushal, 1982].

The oil has a softening effect on the skin and so it

is used in perfumery and cosmetics, and also in pharmaceuticals [Grieve, 1984; Usher, 1974].

A green dye can be obtained from the leaves [Grae, 1974].

A dark grey to green dye can be obtained from the fruit [Grae, 1974].

Wood-handsome, hard, durable. Agricultural implements etc [Gamble, 1972; Parmar and Kaushal, 1982].

#### ***Ethnomedicinal Potential***

Apricot fruits contain citric and tartaric acid, carotenoids and flavonoids [Dan and Doan, 1989]. They are nutritious, cleansing and mildly laxative [Chevallier, 1996]. They are a valuable addition to the diet working gently to improve overall health.

The salted fruit is anti-inflammatory and antiseptic [Dan and Doan, 1989].

It is used medicinally in Vietnam in the treatment of respiratory and digestive diseases [Dan and Doan, 1989]. Antipyretic, antiseptic, emetic, ophthalmic [Parmar and Kaushal, 1982].

The flowers are tonic, promoting fecundity in women [Duke and Ayensu, 1985].

The bark is astringent [Chevallier, 1996].

The inner bark and/or the root are used for treating poisoning caused by eating bitter almond and apricot seeds (which contain hydrogen cyanide) [Duke and Ayensu, 1985]. Another report says that a decoction of the outer bark is used to neutralize the effects of hydrogen cyanide [Bown, 1995].

The decoction is also used to soothe inflamed and irritated skin conditions [Chevallier, 1996].

The seed is analgesic, anthelmintic, antiasthmatic, antispasmodic, antitussive, demulcent, emollient, expectorant, pectoral, sedative and vulnerary [Yeung, 1985; Duke and Ayensu, 1985]. It is used in the treatment of asthma, coughs, acute or chronic bronchitis and constipation [Yeung, 1985; Med. Pl of Korea, 1998].

The seed contains 'laetrile', a substance that has also been called vitamin B17 [Duke and Ayensu, 1985].

This has been claimed to have a positive effect in the treatment of cancer, but there does not at present seem to be much evidence to support this [Fern, K].

The pure substance is almost harmless, but on hydrolysis it yields hydrocyanic acid, a very rapidly acting poison-it should thus be treated with caution [Duke and Ayensu, 1985].

In small amounts this exceedingly poisonous

compound stimulates respiration, improves digestion and gives a sense of well-being [Bown, 1995].

**53. *Pterocarpus acerifolium* Hathipaila, Kanak champa (Fabaceae-Papilionoideae):**

**Synonyms**

*Pterocarpus angolensis* DC. (Kajaet), *Pterocarpus dalbergioides* DC. (Padauk), *Pterocarpus michelii* Britton, *Pterocarpus santalionoides* L'Her ex DC., *Pterocarpus soyauxii* Taub, (Padouk) [Wagstaff, 1935].

*Pterocarpus acerifolium* and all its synonyms are included in the Checklist of International Poisonous Plants-An evidence Based Reference [Wagstaff, 1935; Pinto and Baruzzi, 1991].

Found in deciduous and semi-moist deciduous forests, usually on or near riverbanks, at elevations up to 100 metres.

It is a semi-deciduous tropical tree growing about 25-40 m in height and 180 cm in diameter. It is buttressed with usually straight and cylindrical bole. It is endemic to India and valued for wood, medicine, food, and other uses. Plant parts such as flowers and young leaves are edible while the bark is used medicinally and as source of tannins. The wood is of high quality and resistant to termite attack. It is used for constructions, furniture, panelling, cabinet making, agriculture implements, bridges, piles, etc. It can fix Nitrogen.

Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils and can grow in very acid soils. It cannot grow in the shade. It prefers moist soil.

**Ethnobotanical Potential**

The flowers and very young leaves can be eaten [Ecocrop].

The bark is a source of tannins [Ecocrop]. The heartwood is variable, mainly a rich crimson hue or shades of red to brown, often with darker red or blackish streaks, it is sometimes pale red or yellowish; the narrow band of sapwood is greyish. The texture is rather coarse; the grain generally interlocked; dull to lustrous; without characteristic odour or taste. The heartwood is rated as very durable and also resistant to termite attack. The wood is moderately hard; it is not difficult to saw and machine but because of interlocked grain does not dress to a smooth finish; it turns well; takes a good polish [Gamble, 1972]. It is used for light to heavy construction, joists, rafters, beams and interior finish. It is also used to make high quality furniture, panelling, musical instruments,

high-grade cabinet work, interior joinery, billiard tables, decorative flooring, agricultural implements, veneer, etc [Ecocrop]. Because it withstands weathering, wearing and insect attacks, it is used for bridges, piles, posts, railway sleepers and mine timbers [Ecocrop].

**Ethnomedicinal Potential**

The bark contains tannins and is astringent. It is used medicinally [Ecocrop].

*Punicagranatum* Linn. Pomegranate, Dwarf Pomegranate, Anar.

**Synonyms**

*Punicaflorida*, *Punica grandiflora*, *Punica nana*, *Punica spinosa*.

*Punicagranatum* is a deciduous Tree growing to 5 m by 8 m at a medium rate.

It is frost tender. It is in flower from June to September. The species is hermaphrodite.

It is suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It prefers dry or moist soil. Dry limestone soils to 2700 metres in the Himalayas [Polunin and Stainton, 1984].

Range of occurrence is South East Europe to East Asia - Himalayas.

**Ethnobotanical Potential**

The leaves, fruits and seeds are consumed in one way or the other.

Fruit are consumed raw [Chittendon, 1956; Hedrick, 1972; Simmons, 1972; Grieve, 1984]. Juicy and refreshing with a sub-acid flavour [Facciola, 1990], they are considered delicious by many people though others do not like the large number of seeds with relatively little fruit pulp [Fern]. The fruit juice can be used in soups, sauces, jellies, ice cream, cakes etc [Facciola, 1990]. The fruit contains about 1.5% protein, 1.6% fat, 16.8% carbohydrate, 0.6% ash [Vines, 1987; Reid, 1977]. Annual yields from wild trees in the Himalayas averaged 32kg per tree [Parmar and Kaushal, 1982]. The fruit is about 12cm in diameter [Huxley, 1992].

The fresh seed is soft and can be eaten raw [Vines, 1982]. When dried it is used as a seasoning in dal, fried samosa, stuffing's and chutneys [Facciola, 1990]. The boiled leaves are said to be eaten [Facciola, 1990].

Recommended doses should be taken. Overdose symptoms include: gastric irritation, vomiting, dizziness, chills, vision disorders, collapse and death [Karalliedde and Gawaremma, 2008].

A red dye is obtained from the flowers and also from the rind of unripened fruits [Polunin and Huxley, 1987; Polunin, 1969; Gupta, 1945; Grae, 1974]. The dye can be red or black and it is also used as an ink [149]. It is coppery-brown in colour [Grae, 1974]. No mordant is required [Grae, 1974].

A fast-yellow dye is obtained from the dried rind [Parmar and Kaushal, 1982]. The dried peel of the fruit contains about 26% tannin [Uphof, 1959; Rottsieper, 1946].

The bark can also be used as a source of tannin [Gamble, 172].

The root bark contains about 22% tannin, a jet-black ink can be made from it [Parmar and Kaushal, 1982].

Plants are grown as hedges in Mediterranean climates [Huxley, 1992].

Wood - very hard, compact, close grained, durable, yellow. Used for making agricultural implements. A possible substitute for box, *Buxus* spp [Gamble, 1972; Vines, 1987; Gupta, 1945; Parmar and Kaushal, 1982].

### ***Ethnomedicinal Potential***

The pomegranate has a long history of herbal use dating back more than 3,000 years [Bown, 1995]. All parts of the plant contain unusual alkaloids, known as 'pelletierines', which paralyse tapeworms so that they are easily expelled from the body by using a laxative [Bown, 1995]. The plant is also rich in tannin, which makes it an effective astringent. It is used externally in the treatment of vaginal discharges, mouth sores and throat infections [Bown, 1995]. The whole plant, but in particular the bark, is antibacterial, antiviral and astringent [Lust, 1983; Uphof, 1959; Schry, Pl for Man; Polunin and Huxley, 1987; Yeung, 1985; Parmar and Kaushal, 1982]. This remedy should be used with caution, overdoses can be toxic [Lust, 1983; Duke and Ayensu, 1985]. The flowers are used in the treatment of dysentery, stomach ache and cough [Duke and Ayensu, 1985]. Along with the leaves and seeds, they have been used to remove worms [Grieve, 1984]. The seeds are demulcent and stomachic [Grieve, 1984; Choparaet al., 1986]. The fruit is a mild astringent and refrigerant in some fevers and especially in biliousness [Grieve, 1984]. It is also cardiac and stomachic [Choparaet al., 1986]. The dried rind of the fruit is used in the treatment of amoebic dysentery, diarrhoea etc [Grieve, 1984; Bown, 1995]. It is a specific remedy for tapeworm infestation [Chevallier, 1996]. The stem bark is emmenagogue [Duke and Ayensu, 1985]. Both the stem and the root barks are used to expel tapeworms [Grieve, 1984]. Use this with caution, the root bark can cause serious poisoning [Chief, 1984]. The bark

is harvested in the autumn and dried for later use [Bown, 1995]. The dried pericarp is decocted with other herbs and used in the treatment of colic, dysentery, leucorrhoea etc [Duke and Ayensu, 1985].

**Rhododendron arboreum** Sm. rose tree, rhododendron, laligurans, challan (Ericaceae):

Rhododendron arboreum is one of the most stately and impressiverhododendron species. It is extremely variable in stature, hardness, flowercolour and leaf characteristics. Originally discovered in north-central India, the plant known locally as LaliGuras is the tallest of Nepal's rhododendrons, reaching heights of more than 20m. It has the largest trunk and flowers, blossoming earlier and longer than the others. In its native land, huge trees of Rhododendron arboreum grow to a height of 25m or more.

Trunk often much branched, crooked or gnarled. Bark reddish brown, soft and rough, exfoliating in thin flakes.

The foliage of Rhododendron arboreum is extremely handsome. Its thick, stiff, leathery dark green leaves are covered on the under surface with a thin layer of indumentum ranging in colour from silver to fawn to deep cinnamon, elegant in foliage. Leaves glossy green, oblong-lanceolate, 10-20 cm long and 3.6 cm wide. Crowded towards the ends of branches, petiole covered with white scales when young. The flowers of *R. arboreum* range in colour from a deep scarlet, to red with white markings, to pink to white. Bearing up to twenty blossoms in a single truss this rhododendron is a spectacular sight when in full bloom. It is reported that the bright red forms of this rhododendron are generally found at the lower elevations.

Fruit a capsule, oblong, curved, longitudinally ribbed, up to 3.8 cm long and 1.25 cm wide.

Seeds minute, dark brown, compressed, oblong.

Three varieties are recognized, var. *cinnamomic* is a small tree with smaller leaves and white, pale rose or purple spotted flowers and occurs in Nepal and northern Bengal.

The hermaphrodite flowers are insect-pollinated. Seed capsules ripen from August through March depending on altitude. The first hybrid rhododendrons were created during the early 1830s by Anthony Waterer, at Knapp Hill in Surrey, England. He crossed the rather tender Rhododendron arboreum with the much hardier Rhododendron caucasicum. The result were plants which were hardier than Rhododendron arboreum and which had the advantage of repeat blooming. These hybrids are still among the earliest blooming rhododendrons; they bloom when there is a strong possibility of frost. Repeat blooming

means that unlike most rhododendrons, all of the flowers don't open at once; instead they open in succession. If the first blooms get damaged by frost, there are still flower buds which aren't damaged. Waterer named this hybrid family the 'Nobleanum' grex. A grex is a family of hybrids which result from the crossing of two species rhododendrons, it even includes crosses of the same species done by different breeders. This term became very confusing and it is no longer used by rhododendron breeders, it is only used to describe antique hybrids. *R. arboreum* in the world's most famous rhododendron. This spectacular plant was designated the national flower of Nepal, the legendary home of Mount Everest and other mountain gods. It's even depicted on the national coat of arms.

*Rhododendron arboreum* is found in many vegetation types, and sometimes forms almost pure forest in restricted areas. It is common in the western Himalayas in association with *Quercus* species and *Pinus roxburghii*. It thrives best on moist loam although it is also found on moist rocky ground. The tree can withstand shading although it develops better in the open [Agroforestry Database 4.0; Orwaet al., 2009].

#### ***Ethnobotanical Potential***

Flowers are sour-sweet and are eaten as pickles, although excess may cause intoxication.

A sub-acidic jelly or preserve is made from the petals. The flower petals are eaten raw as a famine food in India.

The wood is used as fuel and for making charcoal.

Sapwood reddish to brownish white; heartwood reddish brown, moderately hard, 640 kg/cu. m. It is easy to work, finishing to a smooth surface. It is used for tool handles, boxes and posts and is suitable for plywood [Agroforestry Database 4.0; Orwaet al. 2009].

The leaves are poisonous [Polunin and Stainton, 1984; Choparaet al., 1986]. The flowers can cause intoxication in large quantities [Facciola, 1990].

The tender leaves are used as a cooked vegetable [Tanaka, 1976; Gupta, 1945; Facciola, 1990]. Caution is advised, due to toxicity. Flowers - raw or cooked [Manandhar, 2002]. A sweet-sour taste, they are said to make a good sub-acid jelly [Facciola, 1990].

The flowers are sometimes simply pickled by adding salt and chili [Manandhar, 2002]. Caution is advised, large quantities can cause intoxication [Hedrick, 1972; Facciola, 1990].

The juice of the leaves is spread over cots and beds to get rid of bed lice [Manandhar, 2002].

Wood - soft, even grained, seasons badly.

Used in turnery, it can also be used to make charcoal and for fuel [Polunin and Stainton, 1984; Gupta, 1945]. The wood is much employed in Nepal where it is used for making household implements, building small houses and fences [Manandhar, 2002]. Planks of the wood are carved to make boxes, cupboards and other furniture [Manandhar, 2002]. It is a very good fuel, burning well with a long-lasting heat - overcollection of the wood for fuel, and also for making charcoal, has become a cause for conservation concern [Manandhar, 2002].

#### ***Services of Rhododendron arboreum***

*Rhododendron arboreum* readily colonizes newly disturbed ground such as road cuttings and landslides and in the crevices of bare rocks.

*Rhododendron arboreum* (Lali Guras in Nepal) is distributed throughout the length of Nepal at a variety of altitudes. It is known for its variably coloured blossoms, which come in shades of red, pink and white. The blossoming plants are a spectacular sight, with up to twenty blossoms in a single truss.

The foliage adds to the plant's beauty. The under surface of the thick, stiff, leathery dark green leaves is covered with a thin layer of indumentum ranging in colour from silver to fawn to deep cinnamon. Certain areas are known for their beautiful rhododendrons of various colours. Trekker tourists who make extensive hiking trips sometimes plan their trips to pass through good rhododendron viewing areas.

#### ***Ethnomedicinal Potential***

The young leaves are astringent and poultice [Gupta, 1945]. They are made into a paste and then applied to the forehead in the treatment of headaches [Choparaet al., 1986; Manandhar, 2002].

The juice of the bark is used in the treatment of coughs, diarrhoea and dysentery [Manandhar, 2002].

A decoction of the flowers is used to check a tendency to vomit, especially if there is also a loss of appetite [Manandhar, 2002].

The juice of the flowers is used in the treatment of menstrual disorders [Manandhar, 2002].

The petals are eaten to assist the removal of any animal bones that have become stuck in the throat [Vanderplank, 1991].

*Ricinus communis* Linn. Castor-Oil Plant, Castor bean (Euphorbiaceae):

#### ***Synonyms***

*Cataputia major* Ludw., *Cataputia minor* Ludw., *Croton spinosus* L., *Ricinus africanus* Mill., *Ricinus*

angulatus Thunb., *Ricinus armatus* Andr., *Ricinus atropurpureus* Pax & K. Hoffm., *Ricinus badius* Rechb., *Ricinus borboniensis* Pax & K. Hoffm., *Ricinus cambodgensis* Benary, *Ricinus compactus* Huber, *Ricinus digitatus* Noronha, *Ricinus europaeus* T.Nees, *Ricinus gibsonia* auct., *Ricinus giganteus* Pax & K. Hoffm., *Ricinus glaucus* Hoffmanns., *Ricinus hybridus* Besser, *Ricinus inermis* Mill., *Ricinus japonicas* Thunb., *Ricinus krappa* Steud., *Ricinus laevis* DC., *Ricinus leucocarpus* Bertol., *Ricinus lividus* Jacq., *Ricinus macrocarpus* Popova, *Ricinus macrophyllus* Bertol., *Ricinus medicus* Forssk., *Ricinus medius* J.F. Gmel., *Ricinus megalosperma* Delile, *Ricinus messeniacus* Heldr., *Ricinus metallicus* Pax & K. Hoffm., *Ricinus microcarpus* Popova, *Ricinus minor* Mill., *Ricinus nanus* Bald., *Ricinus obermannii* Groenl., *Ricinus peltatus* Noronha, *Ricinus perennis* Steud., *Ricinus persicus* Popova, *Ricinus purpurascens* Bertol., *Ricinus ruber* Miq., *Ricinus rugosus* Mill., *Ricinus rutilans* Müll. Arg., *Ricinus sanguineus* Groenl., *Ricinus scaber* Bertol. ex Moris, *Ricinus speciosus* Burm.f., *Ricinus spectabilis* Blume, *Ricinus tunisensis* Desf., *Ricinus undulatus* Besser, *Ricinus urens* Mill., *Ricinus viridis* Willd., *Ricinus vulgaris* Garsault, *Ricinus vulgaris* Mill., *Ricinus zanzibarensis* auct., *Ricinus zanzibarinus* Popova.

Castor-oil plant, (*Ricinus communis*), also called castor bean, large plant of the spurge family (Euphorbiaceae), grown commercially for the pharmaceutical and industrial uses of its oil and for use in landscaping. Probably native to tropical Africa, the castor-oil plant has become naturalized throughout warm areas of the world. The plants are chiefly cultivated in India, China, and Brazil, largely as the source of castor oil. Although the plant is the only species in its genus, there are hundreds of natural forms and many horticultural varieties. The oil-rich seeds contain the poison ricin, one of the most toxic substances known, and consumption of chewed seeds can be lethal.

In the tropics the plants reach about 10 to 13 metres in height. In temperate climates they are raised as annuals and grow 1.5 to 2.5 metres in a single season. The plants bear handsome giant 12-lobed palmate (fanlike) leaves. The bristly spine bronze-to-red clusters of fruits are attractive but often are removed before they mature, because of the ricin concentrated in their mottled beanlike seeds

### ***Ethnobotanical Potential***

Castor oil, also called Ricinus Oil, is a non-volatile fatty oil obtained from the seeds of the castor bean, *Ricinus communis*. It is used in the production of synthetic resins, plastics, fibres, paints, varnishes, and

various chemicals including drying oils and plasticizers. Castor oil is viscous, has a clear and colourless to amber or greenish appearance, a faint characteristic odour, and a bland but slightly acid taste, with a usually nauseating aftertaste.

Castor oil is obtained from castor beans either by pressing or by solvent extraction. Both beans and oil are produced principally by India and Brazil and consumed primarily in the United States, largely in industry.

In addition to the uses mentioned previously, castor oil and its derivatives are used in cosmetics, hair oils, fungistatic (fungus-growth-inhibiting) compounds, embalming fluid, printing inks, soap, lubricants, greases and hydraulic fluids, dyeing aids, and textile finishing materials. Turkey-red oil, long used as a dyeing aid, is produced by the reaction of castor oil with sulfuric acid.

Castor oil consists almost entirely of the triglyceride's ricin oleic acid; and although castor oil has been taken internally as a cathartic, its use can be harmful [Encyclopaedia Britannica].

Oil has been obtained from plants since the beginning of recorded history for oil-burning lamps and for anointing and cooking. Castor oil was used as a lubricant for wheels of carts and wagons before the petroleum era.

The whole plant is very poisonous [Altman, 1980; Stary, 1983; Riotte, 1978], even one seed has been known to be lethal to children [Frohne and Dfander, 1984; Cooper and Johnson, 1984; Huxley, 1992]. There is no specific antidote [Ecocrop].

The seedcoat contains an extremely lethal poison that was once used by the KGB to dispose of their enemies [Phillips and Rix, 1998].

The leaves are only mildly poisonous [Cooper and Johnson, 1984].

The toxic principle is water-soluble so is not found in the oil [Cooper and Johnson, 1984].

The seed contains 35 - 55% of an edible oil, used in cooking [Hedrick, 1972; Hill, 1952].

It is used by the food industry to add butter and nut flavours to various foods [Facciola, 1998].

The seed is a rich source of phosphorus, 90% of which is in the phytic form [Duke and Ayensu, 1985].

Some caution should be observed, due to the toxicity as described above.

The growing plant is said to repel flies and mosquitoes [Chief, 1984; Holton and Hylton, 1979; Philbrick and Gregg, 1979; Riotte, 1978; Hill, 1952; Allardice, 1993].

When grown in the garden it is said to rid it of moles and nibbling insects [Holton and Hylton, 1979; Riotte, 1978; Allardice, 1993].

The plant is traditionally grown in living fences in the Northwestern Himalayas, where it helps to exclude livestock and other animals; mark out land boundaries; whilst also providing a range of medicinal and other uses [Sharma and Devi, 2013].

The seed contains 35 - 55% of a drying oil. As well as being used in cooking, it is an ingredient in a wide range of commodities including imitation leather, soaps, polishes, flypapers, paints and varnishes [Hedrick, 1972; 4; Chief, 1984; Holtom and Hylton, 1979; Grieve, 1984; Uphof, 1959; Schery, Pl for Man].

It is also used as a lubricant and for lighting and as an ingredient in fuels for precision engines [Chief, 1984; Clapham et al., 1962; Polunin, 1969].

The oil is used in coating fabrics and other protective coverings, in the manufacture of high-grade lubricants, transparent typewriter and printing inks, in textile dyeing (when converted into sulphonated Castor Oil or Turkey-Red Oil, for dyeing cotton fabrics with alizarine) and in the production of 'Rilson', a polyamide nylon-type fibre [Duke, 1983]. The dehydrated oil is an excellent drying agent which compares favourably with tung oil and is used in paints and varnishes [Duke, 1983]. The hydrogenated oil is utilized in the manufacture of waxes, polishes, carbon paper, candles and crayons [Duke, 1983].

A fibre for making ropes is obtained from the stems [Chief, 1984].

The leaves have insecticidal properties [Hill, 1952].

Cellulose from the stems is used for making cardboard, paper etc [Usher, 1974; Hill, 1952].

### ***Ethnomedicinal Potential***

The oil from the seed is a very well-known laxative that has been widely used for over 2,000 years [Foster and Duke, 1990].

It is considered to be fast, safe and gentle, prompting a bowel movement in 3 - 5 hours, and is recommended for both the very young and the aged [Grieve, 1984; Chevallier, 1996].

It is so effective that it is regularly used to clear the digestive tract in cases of poisoning [Chevallier, 1996].

It should not be used in cases of chronic constipation, where it might deal with the symptoms but does not treat the cause [Grieve, 1984].

The flavour is somewhat unpleasant, however, and it can cause nausea in some people [Grieve, 1984]

The oil has a remarkable antidandruff effect [Chief,

1984]

The oil is well-tolerated by the skin and so is sometimes used as a vehicle for medicinal and cosmetic preparations [Chevallier, 1996].

Castor oil congeals to a gel-mass when the alcoholic solution is distilled in the presence of sodium salts of higher fatty acids [Choparaet al., 1986].

This gel is useful in the treatment of non-inflammatory skin diseases and is a good protective in cases of occupational eczema and dermatitis [Choparaet al., 1986].

The seed is anthelmintic, cathartic, emollient, laxative, purgative [Grieve, 1984; Chief, 1984; Lust, 1983].

It is rubbed on the temple to treat headache [Duke and Ayensu, 1985] and is also powdered and applied to abscesses and various skin infections [Duke and Ayensu, 1985].

The seed is used in Tibetan medicine, where it is considered to have an acrid, bitter and sweet taste with a heating potency [Tsarong, 1994].

It is used in the treatment of indigestion and as a purgative [Tsarong, 1994].

A decoction of the leaves and roots is antitussive, discutient and expectorant [Duke and Ayensu, 1985].

The leaves are used as a poultice to relieve headaches and treat boils [Choparaet al., 1986].

Rosaphoenicia Boiss. Rambling Rose, Bare Root Rose, Ward Jouri (Rosaceae):

### ***Synonyms***

Rosa arvensis var. trojana Boulenger, Rosa chlorocarpa Fenzl & Heinr. Braun

Height and width range is 6m x 3m, species Climbers & Ramblers, flowers White/Cream,

Bloom size small, bloom type single, suitable for warm climate, flowers with little or no fragrance, flowering in summer, unique to peter bezels- yes

The plant has been shown as a food, medicine and in material including timber, essential oils and another category in Ethnobotanical use categories of Wild Plant Species of Jabal Moussa Bioreserve, Lebanon [Baydounet al., 2017].

### ***Rosa damascene***

Rosa x damascena is a deciduous shrub growing to 1.5 m.

It is in flower from June to July. The species is hermaphrodite and is pollinated by Insects. The plant is self-fertile.

*Suitable for:* light (sandy), medium (loamy) and heavy



(clay) soils, prefers well-drained soil and can grow in heavy clay soil. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers moist soil.

Habitat is not known in a truly wild situation, this species is probably a hybrid involving *R. centifolia* [Bean, 1981; Komarav, 1968]. Range of occurrence is West Asia.

### ***Ethnobotanical Potential***

Young shoots - raw or cooked [Tanaka, 1976; Kunkel, 1984]. Best used when they are still red-coloured, they are peeled before being eaten [Facciola, 1990]. Petals - cooked. They are the source of 'attar of roses' and 'rose water', and are used as a flavouring for drinks, sweets, baked goods, ice cream etc [Facciola, 1990]. The petals are also used to make jam [Komarav, 1968]. Fruit - raw or cooked. The fruit is about 25mm in diameter [Huxley, 1990], but there is only a thin layer of flesh surrounding the many seeds [Fern, K]. Some care has to be taken when eating this fruit, see the notes above on known hazards. The leaves are used as a seasoning. The seed is a good source of vitamin E, it can be ground into a powder and mixed with flour or added to other foods as a supplement [Kavasch, 1979; Facciola, 1990]. Be sure to remove the seed hairs [Kavasch, 1979].

An essential oil obtained from the flowers is much used for perfumery and as a flavouring [Chittenden, 1956; Uphof, 1959; Schery, Pl for Man; Hill, 1952]. 1000g yields 0.5g of oil [Usher, 1974].

There is a layer of hairs around the seeds just beneath the flesh of the fruit. These hairs can cause irritation to the mouth and digestive tract if ingested.

### ***Ethnomedicinal Potential***

The petals are applied externally as an astringent [Choparaet al., 1986]. They are also made into a preserve and used as a tonic that helps to put on weight [Choparaet al., 1986]. The buds (the report does not say if it is leaf or flower buds) are aperient, astringent, cardiac and tonic [Choparaet al., 1986]. They are used for removing bile and cold humours [Choparaet al., 1986]. The fruit of many members of this genus is a very rich source of vitamins and minerals, especially in vitamins A, C and E, flavonoids and other bio-active compounds. It is also a fairly good source of essential fatty acids, which is fairly unusual for a fruit. It is being investigated as a food that is capable of reducing the incidence of cancer and also as a means of halting or reversing the growth of cancers [Matthews, 1994].

*Salvadorapersica* Linn. Tooth brush tree, Pilu (Salvadoraceae):

**Common Names:** Ayurvedic name - Pilu, Unani name - Pilu, Miswak, Hindi name KharaJhal, Chota Pilu, Meswak, English name - Mustard Tree, Salt Bush Tree, Trade name-KharaJhal, Tooth Brush Tree.

*Salvadorapersica* is a large shrub or small tree of Thar Desert. The branches are drooping, terete and glabrous. A typical desert plant grows as a mangrove perennial tree as well as under extreme saline (salt stress) and drought conditions. Thus, the seeds are dispersed by the birds. The plant produces three types of fruits, i.e. pink, purple and white. The purple fruit bearing plants showed better seed traits, viz. seed weight, size, thickness, volume, density and viability and germination percentage as compared to other two types of fruit bearing plant.

The leaves shed twice in a year, i.e. October-November and February-March, but plant never becomes leafless throughout the year. New leaves appear twice in a year, first during April-May and second during September to December and thereafter new leaves develop slowly.

During winter season (cold stress) anthocyanin pigments have been noticed in leaves.

The gall formation has been commonly observed on every plant part except roots. These galls have been reported to possess some growth promoting principles. The plant bears flowers in September-October. The flowers are greenish-yellow borne in axillary and terminal compound panicles. Calyx is glabrous, lobes rounded; corolla is twice as long as calyx; stamens exerted; fruit is a drupe, globose, red when ripe. The plants produce fruits with and without seeds. The fruits are formed in autumn and takes 3 months to increase in size and mature during April-May.

In natural conditions the germination of seeds takes place during rainy season (July and August). It survives under both saline and drought conditions throughout the Indian arid zone. It grows well under arid environment, salt stress conditions and low moisture with high temperature. Soil mixture of 1:2:1 ratio of sand, clay, FYM is best; higher clay content is preferable.

### ***Ethnobotanical Potential***

The root contains steam-distillable oil, which has 90% Benzyl isothiocyanate, a compound responsible for decreasing dental caries and used in the preparation of Meswak toothpaste.

The chemical present in the plant can control gingivostomatitis, skin infection and conjunctiva.

The root bark is tonic, stimulant, emmenagogue. The stem bark is good for gastropathy. [Vikaspedia; Agro-techniques of selected medicinal plants].

Fruits have a sweet, agreeable, aromatic, slightly pungent and peppery taste. They can be eaten raw, cooked, or dried and stored. Fruit with or without seeds is said to contain 1.7-1.86% sugars when ripe. Fermented drinks are also made from the fruit. The leaf is somewhat bitter and aromatic, with a taste likened to mustard.

The leaves are also cooked as a sauce and eaten with couscous or as a green vegetable. Tender shoots, seeds and seed oil are also edible. Edible salts are obtained from ashes.

Leaves and young shoots are browsed by all stock, but normally cattle do not occur in the driest part of the *S. persica* distribution range and hence it tends to be valued more as a camel, sheep and goat forage. Leaves make good fodder as their water content is high (15-36%). The high salt content of the leaves is said to affect the taste of milk, but the leaves are said to increase lactation in cows.

*S. persica* is reported as a good source of nectar.

The wood is sometimes used for firewood and charcoal. However, it is not used for cooking meat, as it leaves a foul taste.

The wood is soft, white, easy to work and is not liable to termite attack. Used for coffins and clubs.

Resin that drips from the tree is supposedly useful for making varnish.

Seeds of *S. persica* contain 30-40% of a greenish-yellow, non-edible oil that has over 50% lauric and myristic acids. It has a high melting point and a disagreeable odour that disappears on purification. The most important aspect of the oil is the presence of a low percentage of C8 and C10 fatty acids that are of great economic significance. The oil is an alternative source of oil for soap and detergent industries.

Crusted leaves placed in cow urine together with leaves of *Pergularia tomentosa* are used to clear hair from tanned hides, allowing the hair to be removed with a knife. Roots contain Salvadorian, a urea derivative.

Planted as shelterbelts and windbreaks to protect farm habitation, gardens and orchards.

Planted in sand dune reclamation and also useful for reclaiming saline soils.

### **Ethnomedicinal Potential**

Toothbrushes made from roots and small branches of about 3-5 mm diameter have been used for over 1000 years, especially by Islamic populations in India, Arabia and Africa. Several agents occurring in the bark and wood have been suggested as aids in prevention of dental caries, such as antimicrobial

agents that suppress bacterial growth and the formation of plaque. The tooth stick is also said to relieve toothache and gum disease. Roots also are used for cleaning teeth and for relieving toothache. Decoctions of leaves are used as a mouthwash, and masticated leaves for tooth and gum problems.

A decoction of the root is used to treat gonorrhoea, spleen trouble and general stomach-ache.

Roots are also used for chest diseases or pounded and used as a poultice to heal boils.

The bark is scratched and the latex used for treating sores.

Seeds are used as a tonic, and seed oil is used on the skin for rheumatism [Orwa et al., 2009].

*Setaria italica* (L.) P. Beauv. Foxtail Millet, (Poaceae):  
*Setaria italica* is an annual growing to 0.5 m by 0.1 m. It is hardy to zone (UK) 6. It is in flower from August to October, and the seeds ripen from September to October. The species is hermaphrodite and is pollinated by Wind. Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It prefers moist soil and can tolerate drought.

The range of occurrence is Asia. The plant has been derived through cultivation and its origin is obscure.

### **Ethnobotanical Potential**

Seeds are consumed after being cooked [Hedrick, 1972; Harrison et al., 1975; Uphof, 1959]. It can be eaten as a sweet or savoury food in all the ways that rice is used, or ground into a flour and made into porridge, cakes, puddings etc [Tanaka, 1976; Facciola, 1990]. The seed can also be sprouted before it is used, when it will become somewhat sweeter [Fern, K]. A nutritional analysis is available [Duke and Ayensu, 1985].

Composition of dry seeds in grams or milligrams per 100g of the food

384 Calories per 100g Protein: 10.7g; Fat: 3.3g; Carbohydrate: 84.2g; Fibre: 1.4g; Ash: 1.8g;

Minerals - Calcium: 37mg; Phosphorus: 275mg; Iron: 6.2mg; Magnesium: 0mg; Sodium: 8mg; Potassium: 281mg; Zinc: 0mg; Vitamins - A: 0mg; Thiamine (B1): 0.48mg; Riboflavin (B2): 0.14mg; Niacin: 2.48mg; B6: 0mg; C: 0mg [Duke and Ayensu, 1985].

### **Ethnomedicinal Potential**

The germinated seed of yellow-seeded cultivars is astringent, digestive, emollient and stomachic [Yeung, 1985; Stuart, 1979; Duke and Ayensu, 1985]. It is used in the treatment of dyspepsia, poor digestion and food stagnancy in the abdomen [Yeung, 1985].

White seeds are refrigerant and used in the treatment of cholera and fever [Duke and Ayensu, 1985]. Green seeds are diuretic and strengthening to virility [Duke and Ayensu, 1985].

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