

## REFERENCES from Dweck Data

### POMEGRANATE

*Punica granatum*

**Leyel, C.F.: Herbal Delights. 1987 Faber and Faber. ISBN 0-571-14850-6.**

Leyel in her book also refers to Pomegranate as Carthaginian apple and Grenadier. It symbolises foolishness, elegance. It is naturally found in Western Asia, China, Japan, and is cultivated in Spain and Mediterranean. Pomegranate appears in one of the earliest medical papyri (the Papyrus Ebers) as a medicine of importance. The bark which was recommended by Dioscorides and Hippocrates as a vermifuge, is still regarded as one of the most useful remedies for tape worm; the rind is used for chronic dysentery; and the fruit is astringent and refrigerant and is made into cooling drinks. It quenches the thirst and gives relief in feverish complaints. The seeds make good conserve, and the flowers have much the same property, often combined in astringent medicine. The flowers yield a red dye.

In Java, the bark of three species of wild Pomegranate - the red flowered, the white flowered and the black flowered - are mixed and used in medicine. The Pomegranate on account of its beauty has been very much reproduced in sculpture and needlework. It was carved on the pillars of brass in the porch of King Solomon's Temple, and when the Israelites were in the wilderness it was chosen to be embroidered on to the robes of the High Priests. It is constantly seen as a design on Church altar cloths.

In mythology the first tree is said to have been planted by Venus in Cyprus. The food that Proserpine ate when in Hades was seven Pomegranate seeds; and the Scythian maid who was seduced by Bacchus was turned by him into a Pomegranate tree, on the fruit of which he placed a crown to compensate her for the crown he had promised her before her seduction.

The lovely avenue of Pomegranates at Granada is said to have been planted by the Moors, who also made a split Pomegranate the arms of the town. The rareness and exotic beauty of the tree make it a fitting subject for legends and fairy tales.

**Lust, John.: The Herb Book – the most complete herb book ever published, 1974, 1<sup>st</sup> edition, Benedict Lust Publications. ISBN 0-87904-007-6.**

**Lust, J.: The Herb Book, 1986, 16th. impression, Bantam Publishing. ISBN 0-553-17273-5.**

Lust in his book says that the Pomegranate grows wild as a shrub in its native southern Asia and in hot areas of the world. It has large red or orange-red flowers which grow on the tips of axillary shoots. It is anthelmintic and astringent. Pomegranate seeds have been used as a remedy for tapeworm since the time of the ancient Greeks. Its high tannin content makes the rind of the fruit an excellent astringent for internal and external use: for skin problems, as a gargle for throat and mouth irritation, as a vaginal douche and for diarrhoea CAUTION: large doses of the rind can cause cramps and vomiting etc.

**Trattler, R.: Better Health through Natural Healing. 1985 Thorsons Publishers. ISBN 0-7225-1382-8.**

Trattler reports that Pomegranate bark decoction is good for pinworms, roundworms, tapeworms.

**Wren, R.C.: Potter's New Cyclopaedia of Botanical Drugs and Preparations, 1985 8th impression, published C.W. Daniels. ISBN 0-85032-009-7.**

Potter says that it is indigenous to N.W. India and countries S. and S.W. of the Caspian to the Persian Gulf and Palestine.

It is cultivated in the Mediterranean. It is a beautiful green tree, with its spiry shape and thick-tufted foliage of vigorous green, each growing shoot shaded in tenderer verdure and bordered with crimson and adorned with lovely scarlet flowers. It is thought by some to be the tree of life which flourished in Eden.

It is medicinally taenifuge (rids tapeworm). This is one of the oldest drugs and is considered specific for removal of tapeworm.

Joseph Miller states that Pomegranate is useful to strengthen the gums, fasten loose teeth. There is a custom for the bride in Turkey to throw a Pomegranate to the ground, the seeds that fall out indicating the number of children she will bear.

**Hoffmann, D.: The Herb Users Guide. 1987 Thorsons Publishing. ISBN 0-7225-1288-0.**

Hoffmann lists Pomegranate as an anthelmintic which does not have toxic effect.

**Winter-Griffith, H.: The Vital Vitamin Fact File. 1988. Thorsons Publishing ISBN 0-7225-1693-2.**

Winter-Griffith reports that Pomegranate contains isopelletierine, methylisopelletierine, pelletierine, pseudopelletierine and tannins. Its known effects are to shrink tissues, prevent secretion of fluids and destroy intestinal worms. It is speculated to treat stasis ulcers and "bed sores".

**Weiss, R.F.. Herbal Medicine. (translated from the 6th. German edition of Lehrbuch der Phytotherapie by A.R.Meuss). The Bath Press. 1986. ISBN 0-906584-19-1.**

Weiss reports that Pomegranate is one of the many plants that contain substances with hormone-type action. **The seeds of Pomegranate , that ancient symbol of fertility, were found to contain an oestrone identical with the genuine hormone.** *Punica granatum* seeds are the **best source of plant oestrone** to date.

**Evans, W.C.: Trease and Evans, Pharmacognosy. 13th edition. 1989. Balliere Tindall ISBN 0-7020-1357-9.**

Trease and Evans say that Pomegranate rind is very astringent and contains about 28% of tannins and colouring matter. The roots contain tannin 22%, and volatile liquid alkaloids 0.5-0.9%, which include pelletierine and pseudopelletierine.

**Grieve, Maud.: A Modern Herbal, 1984 Savvas Publishing. ISBN unknown.**

**Grieve, Maud: A Modern Herbal – the medicinal, culinary, cosmetic and economic properties, cultivation and folklore of herbs, grasses, fungi, shrubs and trees with all their modern scientific uses. 1998 Tiger Books International, London. ISBN No.1-85501-249-9.**

Grieve in her book confirms many of the previous references, including the composition of Pomegranate. The flowers yield a red dye, and with the leaves and seeds were used by the ancients as astringent medicines to remove worms. The Pomegranate is mentioned in the Papyrus Ebers. It is still used by the Jews in some ceremonies, and as a design has been used in architecture and needlework from the earliest times. It formed part of the decoration of the pillars of King Solomon's Temple, and was embroidered on the hem of the High Priest's ephod. There are three types of Pomegranate - one sour the others sweet.

The bark is used in tanning and dyeing. It gives the yellow hue to Moroccan leather.. The barks of three Pomegranate are used in Java: the red flowered merah, the white flowered poetih, and the black-flowered hitam. The seeds are demulcent. The fruit is mildly astringent, and refrigerant in some fevers, and especially in biliousness. The bark is used to remove tapeworm. Excellent vermifuge.

**Stuart, M.: The Encyclopaedia of Herbs and Herbalism. 1986. Orbis ISBN 0-85613-700-6.**

**Stuart, Malcom: Illustrated guide to Herbs. CPG (Cambridge Physic Garden) Edgerton International Ltd. 1994 (originally published 1979, see also B28).**

Stuart says that Pomegranate is mentioned in many ancient writings and has been depicted in various forms of illustration since Egyptian times. The fruit, rind and root bark were used by the ancients. The rind contains yellow bitter colouring matter, gallotannic acid (to 30%), (root bark) Alkaloids (to 0.9%) comprising mainly pelletierine, isopelletierine, and methylisopelletierine; to which the anthelmintic properties are due. Also tannins (to 20%) (leaf) Ursolic acid, betulinic acid, various triterpenes, (fruit) Invert sugar (10-20 %) glucose (5-10%), citric acid (0.5-3.5%), boric acid, vitamin C. It is used as astringent, antihelmintic, antibacterial, the rind is a powerful astringent which is used for dysentery and diarrhoea. Bark is more effective in the removal of tapeworms. The leaf has antibacterial properties and is applied externally to sores.

**Manniche, L.: An ancient Egyptian Herbal. 1989 British Museum Publications. ISBN No. 0-7141-1704-8.**

Manniche reports on *Punica granatum*. She says that the pomegranate grows wild in south-west Asia and is cultivated in Mediterranean countries. It is a shrub or tree with scarlet, scented flowers and later a hard yellowish fruit full of bright red seeds. The tree was introduced into Egypt in the New Kingdom. It was one of the trees planted in the garden of Ineni at Thebes, and Tutmosis III brought it back from exploits into Asia and depicted it in his 'botanical garden'.

In the Graeco-Roman world the pomegranate was synonymous with fertility. The inside of the fruit yields the true grenadine, and the fresh fruit is a favourite drink in Cairo. The bark of the trunk and the root are used in medicine, as they contain tannin, particularly efficient for expelling tape worm, a fact already discovered by the ancient Egyptians (antihelmintic). The classical

authors mention wine made from pomegranate juice, which was according to Dioscorides used for medicinal purposes. Prospero Alpini says that one of the treatments for plague fever consisted of this fruit.

In ancient Egypt the fruit was consumed, and the flowers set in bouquets and garlands. The rind was used to dye leather yellow according to Pliny. Pomegranate may be used in the treatment of dysentery, diarrhoea and stomach-ache. In Egypt it was used for similar purposes.

If 'nurmu' in the Assyrian Herbal is pomegranate, its juice was here prescribed to treat eyes and ears; as an enema; in massage with fish oil; and in poultices for burns and swellings. The rind was used to bind the stomach, a practice also described by Dioscorides. The use of pomegranate as a laxative appears to have been carried on by the Copts, and the rind used to treat a skin ailment.

**Hoffmann, D.: The New Holistic Herbal. Element. Second impression 1991. ISBN No. 1-85230-193-7**

Hoffmann says that the bark is used and contains tannins and alkaloids. It is anthelmintic.

Various parts of the pomegranate can be used in medicine, however, the bark has marked anti-tapeworm activity. It can be rather strong and traumatic, associated as it often is with nausea and vomiting, since the treatment for tapeworm includes a regime of strict fasting followed by purging or enemas.

**Chiej, R.: The Macdonald Encyclopaedia of Medicinal Plants. 1984, reprinted 1988. Macdonald Orbis. ISBN No. 0-356-10541-5 (hb), -10542-3 (pb).**

Chiej says that the rind of the fruit is used, which contains pelletierine and derivatives of pyridine, pyrogalllic acid, granatotannic acid, resins, colouring substances, calcium oxalate, mucilage. It is a taenifuge, anthelmintic, antidysenteric.

The root bark can cause serious poisoning. The rind of the fruit has been used as tanning material and as a fabric dye. Delicious, refreshing summer drinks can be made from the seeds. If the flowers are chewed the saliva in the mouth turns violet. When used to combat parasitic tapeworms a decoction of the bark should only be taken under medical supervision, as it has a powerful effect and some people may not be able to tolerate it.

**Norman J.: The Complete Book of Spices. Colour Library Books. 1992. ISBN No. 0-86283-926-2.**

Norman says that *Punica granatum* or pomegranate is native to southwest Asia, but now grown throughout the tropics and sub-tropics, the small deciduous pomegranate tree bears glossy leaves, brilliant orange-red flowers and large beige- to red-skinned fruits. These may be sweet, sweet-sour or sour, depending on the variety, but all have rather astringent juice. The seeds of the sour pomegranate are sun-dried and used as a garnish. They have a slight sour smell and a distinctive, but subtle, sweet-sour taste. In north India, under the name anardana, they are ground and used as a souring agent in chutneys and curries, in fillings for breads and savoury pastries, and with braised vegetables and pulses.

The raw seeds are used in the Middle East, Turkey and Iran, these are sprinkled as a garnish on salsas, pastes such as hummus or tahina and on desserts.

**Keys, D.: Chinese Herbs - Their Botany, Chemistry and Pharmacodynamics. 1976 (1990 in paperback) Charles E. Tuttle. ISBN No. 0-8048-1667-0.**

Keys says that *Punica granatum* is pomegranate, which has fleshy calyx, partly tubular; lobes 5-7, red; petals 5-7, separate, wrinkled, orange red or white; stamens very numerous. Fruit is a large fleshy berry, brownish yellow or red, several chambers. Cultivated in Old World and New World.

The bark and the root epidermis are officinal. They occur as broken pieces 14 cm long by 4.5 cm wide, 5 mm thick, surface of stem bark with shallow fissures, the root bark rough and often with scars where a portion of the cork has become detached, yellowish, fracture brittle and even. The taste is sour and astringent. The drug contains about 20% tannin, and 0.5-1.0% alkaloids consisting of pelletierine, pseudopelletierine, isopelletierine, methylisopelletierine. The bark of *Punica granatum* and its contained alkaloids act more powerfully on *Taenia* than on *Ascaris*; but because the large amount of tannin often causes vomiting, the alkaloids alone, in the form of tannates, are preferred; ordinary doses often cause mild toxic symptoms of vertigo, dimmed vision, great weakness and cramps in the legs, formication, convulsive trembling etc.; toxic doses promptly produce mydriasis, partial blindness, violent headache, vertigo, vomiting and diarrhoea, profound prostration, sometimes convulsions.

Prescribed as an intestinal astringent, anthelmintic. Dose 7g in decoction.

**Spoerke, D.G.: Herbal Medications. Woodbridge Press (Santa Barbara, California 93160). 1990. ISBN No. 0-88007-181-8.**

Spoerke refers to *Punica granatum* as Pomegranate. There is a mixture of tannins (22-28%) in all parts of the plant. The roots contain a mixture of four alkaloids called pelletierine. These alkaloids are pelletierine, pseudopelletierine, isopelletierine and methylisopelletierine.

The fruit rinds and bark are very astringent. The pelletierine is an anthelmintic. The results of pharmacological study studies vary greatly when dealing with pelletierine. It seems that in large doses the pelletierine could cause complete paralysis.

The fruits are edible, but the rind and bark are used as an astringent. The alkaloids in the roots had widespread use against tapeworm until less toxic substances were discovered.

Toxicity is chiefly of the pelletierine tannate. The symptoms include muscle weakness, dizziness, and in larger doses mydriasis, amblyopia, vomiting, and diarrhoea. Blindness, most likely due to inflammation of the optic nerve, has occurred and occasionally been permanent.

**Medicinal and aromatic plants section. The Pharmaceutical Journal. 10.10.1992, p.474. The medicinal and aromatic plants section of the International Pharmaceutical Federation held a symposium on recent developments in plant research on 17.09.93 during the FIP congress in Lyons, France.**

Antiparasitic plants

The need for plants with antiparasitic properties had existed since time immemorial and was still immense in tropical countries, said Prof. G. Balansard (faculty of Pharmacy, University of Aix-Marseille). He said that for third world countries the treatment had to be cheap. Isolation of a single, pure compound from a plant was difficult, costly and unnecessary, and often a single compound was not as effective as the natural mixtures used in the traditional medicines of India, China, Japan, Iran and North and South Africa.

Among the common anthelmintic plants were *Diginea simplex*, a red algae from Japan (containing kainic acid, an amino acid), *Artemisia cina* and *Semen contra* (both containing santonin, a sesquiterpene lactone), *Cucurbita maxima* (curcubitin, an amino acid), *Aspidium felixmas* (phenols) and *Punica granatum* (pelletin and pelletierin, both alkaloids).

**Schubert, S. Y., Lansky, E. P., Neeman, I. Antioxidant and eicosanoid enzyme inhibition properties of pomegranate seed oil and fermented juice flavonoids., Journal of Ethnopharmacology. 1999,66,1,11-17, 5C00506,En, 24 ref.,Laboratories of Food Engineering and Biotechnology, Technion-Israel Institute of Technology, Haifa 32000, Israel.**

The antioxidant and eicosanoid enzyme inhibition properties of pomegranate (**Punica granatum**) fermented juice (pfj) and seed oil flavonoids were studied. The pfj and cold pressed seed oil (pcpso) showed strong antioxidant activity (determined by measuring the coupled oxidation of carotene and linoleic acid) close to that of butylated hydroxyanisole (BHA) and green tea, and significantly greater than that of red wine. Flavonoids extracted from pcpso showed 31-44% inhibition of sheep cyclooxygenase and 69-81% inhibition of soyabean lipoxygenase. Flavonoids extracted from pfj showed 21-30% inhibition of soyabean lipoxygenase, but no significant inhibition of sheep cyclooxygenase. The pcpso was analysed for its polyphenol content and fatty acid composition. Total polyphenols in pcpso showed a concentration by weight of approximately 0.015%. Pcpso fatty acid composition showed punicic acid (65.3%) along with palmitic acid (4.8%), stearic acid (2.3%), oleic acid (6.3%), linoleic acid (6.6%) and 3 unidentified peaks from which 2 (14.2%) are probably isomers of punicic acid.

**Khennouf, S., Gharzouli, K., Amira, S., Gharzouli, A.. Effects of Quercus ilex L. and Punica granatum L. polyphenols against ethanol-induced gastric damage in rats., Pharmazie. 1999, 54, 1, 75-76. Algeria. Institut de Biologie, Universite Ferhat Abbas, 19000 Setif, Algeria.**

Phenolic compounds isolated from root bark of *Q. ilex* and fruit peel of *P. granatum* (collected from Algeria) were screened for antiulcer properties in ethanol-treated male rats. Pretreatment of animals with the phenolic compounds induced dose-dependent antiulcer properties.