Wild Carrot Monograph

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Wild carrot is a revered plant of old knowledge. Known in North America as the common field weed Queen Anne’s Lace, it is marked by its white lacy umbel, often bearing a single red or purple-black flower in the center. It is the species from which the common cultivated carrot has been bred, and grows wild in much of the world. In Western and Chinese herbalism it is valued for use in the urinary tract as a diuretic for UTIs, kidney diseases, stones and rheumatic complaints. It’s aromatic and stimulating nature can help with digestive or respiratory issues, and it is a useful reproductive tonic, balancing the menstrual cycle and enhancing fertility. It carries with it a secret that is sure to spark attention upon discovery: wild carrot seeds are used as an oral contraceptive throughout the world, for at least the past few thousand years. Read about this plant if you are fascinated by using common weeds as medicine or if you feel disempowered by the options for contraception offered by mainstream technological health institutions. It brings with it the opportunity to learn how to listen to one’s body, how to liberate ourselves from the confines of pharmaceutical industries to choose our own path, and why humans and plants are on this planet together. Wild carrot is a very special accomplice for anyone who is ready to accept it’s powers. This monograph is an attempt to compile and analyze the available information about wild carrot to date, with a hope that it will encourage more use of it in modern folk and clinical herbalism. To contact the author email wildcurrent@riseup.net.
Botanical Nomenclature:
Latin name: Daucus carota
Family: Apiaceae, also known as the Umbelliferae, carrot or parsley family
Botanical synonyms: D. gingidium L., D. carota Linn. var sativa (the root small and white)

Common Names:
Queen Anne’s Lace, Wild Carrot, Bird’s Nest, Bees’ Nest, beesnest plant, bird’s nest root, Philtron, Gizri, crane’s louse wind, lace flower, devil’s-plague, parsnip, rantipole.
Finland/Suomi: porkkana; Sweden/Svenska: vildmorot, morot; France/Français: carotte; Germany/Deutsch: Mohrübe, Möhr, karotte, mohrrube; Ayurveda: Gaajara, Garjara, Granjana; Unani: Gaajar; Chinese Medicine: nan he shi (seed), ye hu luo bo (species); Korea: namhakseul.

Parts Used:
Seeds, flowers, root. Aerial parts are collected in flower or seed and used dried.

Identification:
Wild Carrot grows in disturbed natural areas, roadsides, waste areas and on cultivated land. It may be native to Europe, Asia and Africa, but it’s most likely native to the sea coasts of Southern Europe. It especially thrives growing by the sea. It grows wild throughout Europe, Russia, Asia, North America and India. The root is small and spindle-shaped, whitish, slender, hard, aromatic and acrid with some lateral rootlets. Stems are erect, branched, and about 2 feet tall. Stems and leaves are covered with coarse hairs. Leaves are alternate, finely divided, the lower leaves being larger than the upper and have a sheathing-base around the stem, characteristic of the Apiaceae. Blossoms are densely clustered together in terminal umbels (flattened heads); the flower-bearing stalks are rays coming from a single point. Each ray is divided to form a secondary umbel or umbellule of white flowers. The outer flowers are irregular and larger. Each flower is very small but the whole flower head is conspicuous and showy. The flowers are nearly flat or slightly convex when in bloom. When the seeds ripen, the umbels
contract to form a hollow cup, resembling a bird’s nest (thus it’s old popular name). The fruit/seed is slightly flattened with bristles arranged in five rows. Sometimes the central flower of the umbel is bright red or deep purple in color.18

ROM field guide describes it as a “biennial plant with a hollow stem up to 1.6 m tall, covered in bristly hairs, often reddish purple near the base, arising from a somewhat woody taproot that resembles a white carrot.” The leaves are alternate, 5-40cm long, pinnately compound, divided 2-4 times into narrow segments. The sheathing base of the leaf stalk is white and papery. The flower cluster is a dense compound umbel, 6-15cm across, with numerous umbelets. There is a whorl of bracts just below the primary branches of the umbel. Flowers are white, often with a single dark red or purple-black flower in the center of the umbel. Flowers from June to September [in Ontario]. Fruit is a schizocarm 2-4mm long. The fruiting umbel’s branches curve inward, resembling a bird’s nest19. The first year of growth, has only a basal rosette of the pinnately compound leaves divided 2-4 times into narrow segments.

Robin Rose Bennett describes the seeds “which are green in late summer and early fall, turn light brown as they ripen to maturity and the nearly flat umbels contract to form a cup-like seed-head or ‘bird’s nest.’” The United States Dispensatory describes the seeds: “the fruits are very light, of a brownish color, an oval shape, flat on one side and convex on the other, and on their convex surface present four longitudinal ridges, which are beset with stiff, whitish hairs or bristles. They have an aromatic odor, and a warm, pungent, and bitterish taste.”21

~ Signatures
The red or purple dot in the center of the inflorescence is a blood related signature.

The seed-head forms a folding-in structure resembling a bird’s nest, often with an opening resembling a uterine-like cervix.22

~ Differentiation from poisonous relatives

Poison Hemlock (Conium maculatum) and Water Hemlock (Cicuta spp.) are two poisonous carrot family plants that resemble Daucus carota. It’s very important to use a field guide to identify wild carrot while in flower to avoid confusing this plant. DO NOT harvest or ingest a plant that you think is Daucus carota without being absolutely certain of its identity, the consequences can be deadly. Here are helpful hints to identify Daucus carota:

- In Vermont, Daucus carota flowers in July-August, a month later than poison hemlock.25
- The deep and narrowly lobed bracts under the umbels are unique to Daucus carota.
- Daucus carota has a hairy stem, while Conium maculatum has smooth, spotted stem and the stem of Cicuta spp. is streaked with purple.24
Commercial Sources and Handling:
This plant is not readily available at most herb stores or health food markets. Most likely people will wild harvest their own for personal or community use. The seeds should retain potency for a few years if stored properly (whole, in jars, in the dark). The tincture is beginning to be more available, and has a longer shelf-life.26

Here are some places that have been known to carry wild carrot seed or flowers: Penny’s General Store (NYC), Flower Power (NYC), www.wildpantry.com, www.bearwallowherbs.com, Healing Spirits Herb Farm in Avoca NY, Companion Plants in Athens OH (for seeds to plant),27 Cedar Spring Herb Farm (MA), Ryan Drum (WA), Sunstone Herb Farm (NM), Avena Botanicals (ME).28

Growing and Harvesting:
This herb is found wild in many meadows and backyards, and is very easy to grow.

Harvest aerial parts (leaves and flowers) in July/August as flowers start to open.29

Harvest roots in October from first year basal rosettes. The first year of growth, when one would harvest the roots, has only a basal rosette of the pinnately compound leaves divided 2-4 times into narrow segments, no flowers. The leaves and root smell characteristically like Carrot. Harvest only where there are second year, flowering wild carrot plants nearby.30

Harvest seeds when ripe but not fully mature, reddish and plump31. Robin Rose Bennett has recommended harvesting the seeds as late as possible in the fall, in the death part of nature's life cycle, for use as a contraceptive.32 In her 2011 exploration, it is suggested to harvest the seeds in the fall when they are fully formed, and green or freshly turned brown.33 Bennett prefers using flowers that have the red/purple “dot” in the center, she intuitively feels that these are the best plants to gather as a contraceptive.34

Lise Wolff tinctures the whole seed heads, using the “signature” as reminiscent of a womb.35

According to the company Horizon Herbs, “[the] plant prefers full sun to part shade, dry to mesic soils, poor soils or waste places. Sow seed in spring. Barely cover with soil, tamp securely and keep evenly moist until germination. Thin or transplant to 6 inches apart.”36

Taste / Odor:
pungent, aromatic, bitter, salty37

Chinese Medicine: bitter, acrid, neutral, and slightly toxic38
Energetics:
Warming and dispersive. The root is moistening, the seed is neutral to drying.\(^{39}\)
Enters the Spleen and Stomach channels.\(^{40}\)

Physiological Actions:
Seed – primary: uterine tonic (contraceptive, fertility enhancer) urinary antiseptic, diuretic; secondary: carminative, diaphoretic, anthelmintic\(^{41}\). Antibacterial, antirheumatic, antispasmodic, aperient, appetite stimulant, chologogue, emmenagogue, hypocholesterolemic, tranquilizing nerveine, prostatic, relaxant, uterine relaxant.\(^{42}\) Estrogenic, blocks progesterone synthesis.\(^{43}\)

Root – demulcent, aperient, vulnerary.\(^{44}\) Primary: antilithic, antirheumatic, diuretic; secondary: anticattarhal, anti-inflammatory, astringent, diaphoretic.\(^{45}\) Also widely eaten as food.

Leaves and flowers – primary: antilithic, antirheumatic, carminative, diuretic; secondary: anti-inflammatory, diaphoretic.\(^{46}\)

Whole plant or not specified – anti-lithic, carminative, diuretic\(^{47}\); antispasmodic, antirheumatic.\(^{48}\)

Specific Indications and Patterns:
Guido Masé: for urinary tract infections and as a morning after contraceptive.\(^{49}\)
Felter and Lloyd: for dropsy, chronic nephritic affections (kidney disease) and urinary gravel.
Matthew Wood: it breaks up stagnant blood, and removes gas and flatus.\(^{50}\) To use in inactive, torpid congestion of the lungs, kidneys or abdomen.\(^{51}\)
Maude Grieve: “excellent for a gouty disposition”.\(^{52}\)
Chinese Medicine: enters the Spleen and Stomach channels to kill parasites.\(^{53}\)
Robin Rose Bennett: The seeds and flowers of Queen Anne’s Lace (wild carrot) are used to prevent implantation of a fertilized egg in the uterus.\(^{54}\)
**Clinical Uses:**

- **Urinary, kidneys and water retention**

As an excellent diuretic, antilithic and antiseptic, wild carrot is widely used as a urinary system tonic, for stones in the bladder and kidneys, urinary tract infections, water retention, gout and rheumatism.

Masé uses the seeds as a specific antiseptic diuretic for urinary tract and bladder infections. The root is used for kidney stones and gout as a urinary anti-inflammatory and demulcent.55

David Hoffman also considers the volatile oils as an active urinary antiseptic, used in the treatment of cystitis and prostatitis. It can be used in formulas for gout and rheumatism as a diuretic.56 It is an active urinary antispasmodic, specific for the treatment of kidney stones.57

Vertolli uses the leaves and flowers as a urinary tract tonic, the root being similar but not as effective. The roots are better for kidney and bladder stones, and rheumatic conditions. The seeds are useful for UTIs combined with the herb.58

The seed or root can be used as a diuretic kidney remedy for water removal, gout and rheumatism. Wood says that it helps to “thread the urine through the kidneys.”59 It is also considered it useful for frequent urination, cystitis, edema, stones, gravel, arthritis and gout. Due to the volatile oils, it is considered an irritating diuretic, and therefore should be avoided in acute kidney infections. It stimulates the kidneys, stimulates urine, and removes mineral deposits from the tissues, thus removing excessive mineralization. It probably also increases water outflow from swollen joints, thus helping with osteoarthritis (A specific indication according to Kim Dudley) and gout.60 Michael Moore indicates the seeds for gout, hyperuricemia and uric acid elevation in the blood.61

According to Dr. John Eberle, the seed infusion is useful for swelling in the lower extremities and dropsy (edema). George Slack describes it as being “for dropsy and all obstructions of the kidneys”, for severe back pain with little urine, using a strong infusion of the herb. Phyllis Light reports that Tommie Bass used it for water retention in the abdomen, for beer belly, hypothyroidism, and adult onset diabetes, mostly for men. It is also useful for water retention related to menstruation, with backache and swollen feet.62

Maude Grieve describes the whole herb as “excellent for a gouty disposition”, for dropsy, chronic kidney disease, bladder issues, stones and gravel.63

Dr. Christopher and Norma Hook describe wild carrot as being useful for dropsy, retention of urine, gravel, bladder problems, flatulence, painful urination and nephritic complaints, eczema, itching, and liver disorders.64

- **Reproductive tonic and stimulant; endocrine effects**

Guido Masé uses wild carrot seeds for menstrual irregularities and oligomenorrhea, where blood is adequate (not in Blood Deficiency), but menstruation is scanty, clotty, dark and irregular. It could be considered for improving endometrial lining, in someone who has had first trimester miscarriages or when they have enough blood but still infertility and not regular menses. It helps fertility by increasing blood flow to the uterus and improving endometrial lining. For this purpose, take for a few months, then cease taking when trying to conceive. He reports its use for oral contraception.65

Michael Vertolli considers the seeds a tonic for the female reproductive system, useful for menstrual cramps, bloating, emotional PMS, menopause and amenorrhea. He also reports its use as an implantation inhibitor for contraception.66 Dr. Christopher and Hook also report its use for amenorrhea and
dysmenorrhea. Lise Wolff says that wild carrot seed helps to slough the uterine membrane and regulate the menstrual cycle. It helps to reduce heavy flow, excessive growth of the uterine membrane, possibly also in endometriosis. It seems to prevent heavy flow and clotting. When taken before, during or after the period, it prevents conception by sloughing the membrane. When one stops taking it, the uterine membrane is more well toned and therefore it can encourage conception.

According to Dr. John Christopher, it is a pituitary stimulant, and therefore works via the endocrine cascade on the thyroid, kidneys and sex hormones. It has been used to regulate fertility. As a diuretic, it is useful to reduce water retention related to the menstrual cycle. It can also be used for low sex drive. It stimulates the thyroid and can be useful in diabetes in appropriate cases. Phyllis Light uses the flowers for hypothyroidism with black walnut and chickweed. Mischa Schuler claims that wild carrot seed works as a galactagogue, has action on the TSH, and impacts GnRH. In the first half of the cycle it may increase estrogen levels.

In Ayurvedic medicine the seeds are used as an emmenagogue and for hot flushes during menopause.

**Wild Carrot Seed as a Contraceptive**

The seeds of Queen Anne’s Lace (wild carrot) are used to prevent implantation of a fertilized egg in the uterus.

See “preparation and dosage” section for more details on how to use it, “pharmacology” section for thoughts on the mechanism of action, and “Human Explorations” to find out about current learning efforts.

Robin Rose Bennett, a herbalist who has been studying wild carrot seed as a contraceptive since the early 1990s, says:

“I have continued using Daucus carota and gathering stories from other women and their partners who use the plant … as a natural contraceptive. I have wanted to be able to tell women and their partners that they could have absolute confidence in wild carrot as a safe, natural, herbal contraceptive, but the life force is a powerful thing and nothing is absolute!”

Bennett also states that:

“development of a relationship with wild carrot as a contraceptive plant will be rewarding, not only to the women of our generation, but also to the women of future generations. They will go on to use WCS with confidence, knowing that their mothers and grandmothers relied on it and trusted its effectiveness. This empowers women and their partners, and challenges each woman to engage in a deeper relationship with herself, and with the gifts that nature provides. It can also help people learn to re-direct the energy of fertility generated during love-making, resulting in far less unwanted pregnancies, and reducing or perhaps eliminating the need for clinical abortions.”

Robin Rose Bennett recommends taking wild carrot one to three times after sexual intercourse, taking the first dose within 8 hours and then repeating that dosage twice more every 8 to 12 hours if the person is in a fertile phase. She recommends using the dried seeds, by either chewing one teaspoon of the seeds, or combining freshly ground seeds with honey or nut butters; or taking 15-30 drops of flower or flower and seed tincture.

The following is a case that Bennett shared:
“She used the [Daucus carota] seeds successfully for six years, starting when she was 16 years old. She is now 24. She told me that her intuition tells her that the seeds benefit her reproductive organs and hormonal cycle in general. … She was taking the seeds by the traditional method – chewing and swallowing one teaspoon (not in water) and she took them before, during, and after ovulation. She was not, and never had been using them as a morning-after plant, but also never restricted her times of intercourse to non-fertile times, so, at least theoretically, any intercourse during her fertile time was coinciding with when she was taking her carrot seeds. The one time she got pregnant her cycle had shifted and she had ovulated at a different time of the month than she had thought. She had just fallen in love with a new guy and Nature being how Nature is, maybe that’s what brought about her early ovulation! This brings up another vital point. It is wise, practically speaking, and on all other levels (spiritual, emotional, social/political), for a woman to learn the signals of her own cycles of fertility and not simplistically rely on a calendar (even a lunar one) or an external device like a fertility lens … Women need to come to know, respect and love their bodies. The same young woman recently lost track of when she was ovulating and had unprotected intercourse. The next day she chewed a teaspoon of wild carrot seeds. The day after that, she chewed another teaspoon of seeds. She got her period six days later, which was one week early.”

Phyllis Light has been telling women about using wild carrot flower tea as herbal birth control for the past 10-15 years. She uses it in the Appalachian tradition as passed down by her grandmother. They make tea from 2-3 fresh flower heads depending on the size of the flowers, steeped for 5-30 minutes, drinking 1 cup within one day after sexual intercourse.

Herbalist Donna Eaton suggests using the seeds eight hours after intercourse. She has people take a second dose, eight hours later, if they are having intercourse during the most fertile week of their cycles.

Lise Wolff, a herbalist and homeopath based in Minnesota, has successfully used the tincture of wild carrot seeds with clients and students for many years. She tinctures the entire seed head and recommends seven drops of tincture, three times a day for three days after sexual intercourse. She has had nearly total success – the times when it didn’t work were when someone lowered the dose to three drops daily, and when someone had just come off of hormonal birth control. She also finds that many people’s menstrual cycles become more regular when using wild carrot seed.77

There appears to be a hormonal component to using Daucus carota as a contraceptive and fertility enhancer. We know that giving progesterone for 3 days and then withdrawing it can help to complete a miscarriage. Phyllis Light is confident that this how wild carrot works, which is why it is important to give it and then take it away. Lise Wolff reports that many people experience a copious increase in vaginal secretions within minutes of taking it, resembling fertile mucous. Bennett believes that “taking [Daucus carota] and then removing it causes the internal environment of the woman to become inappropriate for conception, perhaps by causing her estrogen/progesterone balance to change temporarily. This could be from [Daucus carota’s] tonic effects on the pituitary and thyroid glands.”78 She notes that many people will notices changes in their menstrual cycle when taking wild carrot, and it is a good idea to combine it with another method of birth control while getting used to it in one’s body.79

As a contraceptive, Schuler prefers using only the seeds rather than the seeds and flowers combined. She thinks that if you take wild carrot seeds before you ovulate then you could increase your chances of pregnancy (it may increase estrogen levels earlier in the cycle, which helps sperm live). She thinks it may be useful to take wild carrot seed again after ovulation. wild carrot seed might be removing progesterone so that the environment isn’t likely for an egg to implant. She says that some people’s cycle shortens up to 2
days when taking wild carrot seed. When they stop taking it, their cycles lengthen back out. There’s no evidence of wild carrot seed being teratogenic when used as a contraceptive.80

Through her work on researching wild carrot, Bennett has determined the following contra-indications as a contraceptive ally. She doesn’t recommended it as a contraceptive for people being affected by hormonal fluctuations, such as the birth control pill, HRT, directly after pregnancy or miscarriage, or during menopause. It’s best to wait until normal cycles resume before starting to rely on wild carrot seed as a contraceptive. Some people experience vaginal dryness when chewing the seeds, but not when taking tincture or tea. Wild carrot as a contraceptive seems to be less effective if taken on a daily basis.81 She doesn’t advise for people to rely on wild carrot who experience significant menstrual changes while taking it,82 especially new discomforts such as breast tenderness. For people who are extremely fertile (have conceived while using another form of birth control), wild carrot is best combined with another non-hormonal method of birth control. In Bennett’s experience and research, people who take wild carrot as a contraceptive and later wanted to keep a pregnancy have all had healthy babies. Nursing mothers, once resuming their regular cycles for at least six months, could rely on wild carrot again.83 See “Safety” for more information on the contra-indications.

According to the Sage-Femme collective, wild carrot seed prevents implantation and interferes with proper development of the endometrium. It can be used as a simple in the first two weeks of pregnancy to bring on menstruation.84 Matthew Wood reports that wild carrot seed is an abortifacient, most likely due to the irritating volatile oils, but also likely through the hormonal system.85 Bennett, however, thinks that it only works preventatively to prevent implantation of a fertilized egg.86

- **Digestion and GI infections** -

In Chinese Medicine, the seeds are used for abdominal pain due to accumulation of parasites in the digestive tract, especially roundworms, pinworms and tapeworms.87 Wild carrot is active against amoebas (giardia) and worms.88 Wood recommends it as a tea for thread worms.89 The seeds can be used as a carminative to relieve flatulence and colic90 and are a strong digestive aid for gas, appetite, and inflammation.91 The volatile oils promote appetite and digestion.92 Wood describes it as a carminative that stimulates secretions of the mucosa of the GI tract. It’s good for a person who is both thin and overweight, when one has a difficult time assimilating oils and minerals, when food ferments in the stomach and there is low liver function. It is helpful for constipation with dry and hard stools with some periods of looseness.93 This herb could be considered in dysentery and jaundice. The root infusion can be used as an aperient.94

- **Respiratory** -

Wood claims that the volatile oils stimulate the mucosa of the respiratory tract. It use useful for a chronic cough with shallow breathing.95

- **Musculoskeletal system** -

Wood indicates wild carrot for people with knotty and thin muscles that tire easily, for fibromyalgia, gout, arthritis, arthritic back pain.96

- **External uses** -
The grated root can be used for skin diseases especially old ulcers that needed some counter-irritation. Boiled roots act as gentle emollient as a poultice on ulcers; cooking makes them more demulcent and less pungent. A poultice of the root can help to reduce the pain of cancerous ulcers. The leaves, applied with honey, help to cleanse runny sores and ulcers. It could also be helpful for abscesses, carbuncles, scrofula and bad wounds.

The seeds can be combined in a formula for many types of vaginitis, usually made into a wash and applied externally (see formula in “Combinations and Similars section”).

--- Flower Essence ---

Wood uses Queen Anne’s Lace flower essence for confusion of spiritual and sexual drives. The Flower Essence Society describes the positive qualities as “spiritual insight and vision, integration of psychic faculties with lower energy centers.” They describe the patterns of imbalance as “obscuration of sight, not wanting to see what is, projection and lack of objectivity in psychic awareness; distorted clairvoyance, often due to imbalances in lower chakras.” The describe seeing clairvoyantly as “whenever one is able to see not only the physical thing itself, but also the subtle qualities which emanate from the physical. They use Queen Anne’s Lace as an important remedy for this transition of consciousness.

“It helps to remove deريس in the emotional lens of the soul which distorts 'clear-seeing.' … Queen Anne's Lace harmonizes both 'higher' and 'lower' energies, so that one can stay connected with the Earth and one's earthly energies, yet also be emotionally clear and objective in one's spiritual insight and vision. This essence is helpful for many who are seeking balanced psychic opening, or who may experience vision problems associated with emergent clairvoyance. The Queen Anne's Lace flower helps to ground and purify, as well as to refine and sensitize the soul's 'clear-seeing.'”

Traditional Uses:

The seeds have been used as a contraceptive by people with uteruses for thousands of years. The earliest reference dates back to the 4th or 5th century B.C., in a book written by Hippocrates. Information about wild carrot seed for contraception was recorded by Dioscorides, Scribonius, Largus, Marcellius, Empericus and Pliny the Elder who noted that “4 footed animals will not eat it, except after a miscarriage.” Dioscorides says that wild carrot seeds bring forth the menses and aborted an embryo. Scribonius includes wild carrot in a recipe for abortion.

John Riddle speculates “Queen Anne’s lace may have been what women relied upon in ancient times. We cannot know how many … if judged by the number of references to it, Queen Anne’s lace was not in frequent use for birth control. But here is a perplexing point to ponder: to what degree can usage be determined by the frequency of appearance in the historical documents, which are themselves scattered over the centuries? It is not difficult to accept as a working hypothesis that there is a link between the women in antiquity who know the effect of Queen Anne’s lace and those in modern India who chew its seeds and those in North Carolina who take the seeds with a glass of water. My hypothesis is that generally the information about the drug’s usage was transmitted orally … the chain of learning about antifertility drugs was forged by vocal cords.”

Eclectic
Felter and Lloyd describe its uses in the King’s American Dispensatory (1898). The root and seeds were used as a stimulant and diuretic, in infusion for dropsy, chronic nephritic affections (kidney disease) and urinary gravel. They are used as a carminative and to relieve strangury (inability to urinate). The grated root was applied externally as a poultice to “phagedenic, cancerous, malignant and indolent ulcers – relieving the pain, correcting the fetor, lessening the discharge, and altering the morbid conditions of the parts.”

Masé describes its historical use for strangury when people with penises took too much Spanish fly as an aphrodisiac.

The grated root has been used for skin diseases and old ulcers that needed some counter-irritation. The boiled roots act on the kidneys, and as a gentle emollient may be poulticed on ulcers. Cooking makes them demulcent and less pungent.

The United States Dispensatory (1918) describes the seeds as moderately excitant and diuretic, being used in chronic renal diseases and dropsy, giving an ounce in infusion per day. The flowers can be substituted for the seeds. The root has been used “as a local stimulant to sloughing or indolent ulcers.”

Scudder (1898) used the seeds similarly to Felter and Lloyd for kidney disease, urinary gravel and suppression of urine, as well as for irritation and inflammation of the bladder and urethra, “dysuria from blisters and other causes, gonorrhoea, dropsy, etc.” He used the root as a decoction for inflammation of the genito-urinary organs and sometimes for dropsey. He describes the roots as “analogous in every respect to those of the seeds.”

Cook said that the seeds “have been used in medicine since the middle centuries. They are a pleasant and diffusive aromatic stimulant, somewhat relaxant, carminative and acting chiefly upon the kidneys.” The boiled or freshly grated roots are poulticed on irritable ulcers, carbuncles and abscesses as an emollient and stimulant. Cook also claims that “It is said that they will even abate the suffering of phagedaene and of cancer. They certainly deserve far more attention than they have received from the profession; and sores in which it seems impossible to arouse a healing process by ordinary means, will usually improve at once under this application.”

**Key Constituents:**

**Volatile oils** – thujene, pinenes, azulenes, eugenol, geraniol, myristicin, asarone, asarylaldehyde, linalool, limonene, bergamotene, daucene, elemicin, alpha-curcumene, camphene, alpha-terpinene, terpenine-4-ol, alpha-terpineol, bornylacetate, beta-selinene, alpha-gurjujeune, daucol, carotol, tiglic acid. Seeds have mostly sesquiterpenes; blooming herb has both monoterpenes and sesquiterpenes. The fruit contains asarone (C6H12O3), asaraldehyde (C10H12O4), bisakolene, daucol, carotol and terpenen-4-ol.

**Bioflavonoids and flavonols** – apigenin, chypsin, luteolin, kaempferol, quercitin and various glycosides.

Other properties include gamma-Linolenic acid, phytosterols, tannins, petroselinic acid, alkaloids daucine and pyrvalidine, coumarins (root), porphyrins (seed), phenylpropanoids beta-bisabolene and beta-asarone.

The root contains daucane-type sesquiterpenes, including trans-dauc-8-ene-4beta-ol, trans-dauc-8,11-diene, dauca-5,8-diene, acora-4,9-diene, acora-4,10-diene (see more in pharmacology section); sitosterol glucoside, carotol, daucol, furocoumarins, flavonoids, polyacetylenes.

The furanocoumarins found include 8-methoxypsoralen and 5-methoxypsoralen.
Pharmacology:

Much of the action of the seeds is due to the volatile oil content. According to the United States Dispensatory, “by distillation [the seeds] yield a pale yellow volatile oil, upon which their virtues chiefly depend.” It was found to yield 1.26%.124

The terpenin-4-ol oil in the seeds is a renal irritant, believed to cause the diuretic activity.125

Studies showing an anti-fertility effect

The action of *Daucus carota* seed extracts on mice has been such that the implantation process is disrupted and a fertilized ovum either will not be implanted or, if it has been implanted for only a short period, it will be released. Evidence suggests that terpenoids in the seed block crucial progesterone synthesis in pregnant animals.126 It could stimulate sex hormones FSH and LH through the pituitary.127 Porphyrins in the leaves are known to stimulate the pituitary to release gonadotropic hormones.128 Volatile oils stimulate circulation to uterus, and act like counter-irritant.129

Increased blood flow to the uterus causes more endometrial lining, so implantation is easier if the volatiles are not present anymore, which could explain it’s fertility enhancing effects when taken away.130

We don’t know exactly the mechanism of action of wild carrot that prevents the implantation of a fertilized egg in a human uterus. What we do know from the plant’s chemical constituents and pharmacology is that it the terpenoids have shown an anti-progesterone and implantation inhibiting action in animal models; the volatile oils may stimulate circulation to the uterus; the volatile oils and terpenoids are irritating to the kidneys, and we may speculate that they may also irritate the uterus. Blocking progesterone synthesis in the luteal phase of the menstrual cycle inhibits necessary conditions for the endometrial tissue to sustain a fertilized ovum. There are other questions about exactly how this works that may or may not be answered with time. The following is a summation of the evidence to date.

Author’s note: The following studies involve confining and killing many, many animals. I do not support this cruel treatment in the name of Science and Progress; but the damage has been done, and the information gathered is worthy of our attention. The traditional use of this plant as a contraceptive over thousands of years is enough proof for me, but also I have found it extremely interesting to understand better how this might work.

MM Sharma, 1976. Alcoholic extracts of carrot seeds (*Daucus carota*) were assessed for effects on implantation in mice. Doses of 60 to 120mg were administered. The extract was found to possess weak estrogenic activity. The extract significantly inhibited the uterotrophic effect of estradiol-17beta in the 3 day antiestrogenic assay. The 80 and 120mg doses of the extract, administered orally from day 4 to 6 postcoitum, effectively inhibited implantation. Administration on days 8-10 postcoitum did not affect pregnancy.131

Chu et al., 1985. “A significant decrease in serum progesterone level was observed in treated rats. These data clearly implied that carrot seed terpenoids blocked progesterone synthesis in pregnant animals.”132 [note: author was unable to read this study, this quote is from a review paper.]

Kant et al, 1986. The terpenoids were shown to block progesterone synthesis in pregnant animals. When progesterone receptor sites in the uterine lining are blocked, the uterus cannot make a nutritive bed for the fertilized ovum, thus preventing implantation.133

Kaliwal et al, 1986. A study designed to know the effects of progesterone in the anti-implantation activity
of the carrot seed extract in albino rats. They were given 0-6ml/100g of body weight of carrot seed extract, administered subcutaneously from days 1-7. Controls exhibited implantations on day 8 and small embryos on day 16. In the carrot seed group, the extract was administered on days 1-7, and there were no implantation sites on day 8. A group was given carrot seed and graded doses of exogenous progesterone from days 8-15, finding that 4-8mg of progesterone caused almost all the rats have implantations on day 16. The authors conclude that “Any imbalance in the hormonal ratio causes delay or inhibits implantation. Therefore, the inhibition or delay of implantation by carrot seed extract might be due to an imbalance in the progesterone-estrogen ratio which could be reversed by the administration of exogenous progesterone.”

Bhatnagar, 1995. A study looking at contraceptive effects in rats. A 95% EtOH extract was administered to rats at different doses ranging from 50 to 250 mg/kg of body weight. There was a dose dependent effect, where a lower dose showed anti-implantational activity and higher doses caused fetus resorption. The main effect appears to be an abortifacient activity. At higher dose levels there was a pro-estrogenic effects, whereas at lower doses there was an anti-estrogenic effect.

Majumder et al., 1997. Study designed to understand the mechanism of action and the component responsible for the anti-fertility activity in mouse ovaries. Extract was administered intraperitoneally for 15 days and the estrous cycle examined by a vaginal smear daily. They killed the mice and kept their ovaries for examination. The petroleum ether extract of carrot seeds reduced the wet weight of ovaries and arrested the normal estrous cycle. There was an elevated amount of cholesterol in the ovaries, which serves as a precursor for the synthesis of steroid hormones, suggesting that the cholesterol was not utilized. The possible mechanism of action resulting in inhibition of fertility is thought to be from inhibiting the activity of the key enzymes involved in ovarian steroidogenesis [synthesis of sex hormones].

- Volatile oils and anti-microbial activity -

Kumarasamy et al, 2005. A study looking at the activities associated with constituents in the methanol extract of wild carrot seeds. Constituents isolated include three luteolin flavones. These compounds were found to have free radical scavenging activity, and antibacterial activity against Staphylococcus aureus, Escherichia coli, Bacillus cereus, Citrobacter freundii, and Lactobacillus plantarum.


Maxia et al, 2009. An in vitro study investigates the volatile oils of Daucus carota growing wild on the Atlantic coast of Portugal and in the Mediterranean on Sardonia Island. It found that there is a higher essential oil content in the seeds than the flowers. Constituents of the methanol seed extracts showed antibacterial and anti-fungal activity against a wide range of organisms, including Staphylococcus aureus, Escherichia coli, Bacillus cereus, Citrobacter freundii, and Lactobacillus plantarum. There is the most activity in the oils of the mature umbels, less in the herb, and the least in the flowering umbels. The leaf, stem and blooming umbels are mostly monoterpenes and/or sesquiterpenes. Oils isolated from umbels in nest or seeds were mostly sesquiterpenes and phenylpropanoids (beta-bisabolene and beta-asarone).
Human Explorations:

*Bennett, 1992*

Please note: Robin Rose Bennett no longer recommends the dosage regime suggested in this article. Please see dosage section for more current recommendations.

A grassroots exploration of women using wild carrot seed (WCS) as a contraceptive conducted in NYC. Their experiences were reported on a monthly basis, via charts that detail daily use of WCS, ovulation, menstruation, and sexual intercourse. 13 women participated enough to be counted. 10 of these women had been pregnant previously (therefore assumed to be fertile), the other three had not. There were three dosage regimes used: every day; daily for 3 days before ovulation, during ovulation and at least 3 days after ovulation; and daily for seven days following sexual intercourse. The dosage for all was one tsp WCS chewed well and rinsed down with a liquid. Three participants apparently conceived. One confirmed her pregnancy with a test and terminated it clinically; she used the seeds on 3 of the 7-8 recommended days around ovulation. The other two pregnancies were unconfirmed and the women used herbal emmenagogues to menstruate. One of those two women used the seeds for 7-8 days around ovulation and the other woman used them daily.

There were no consistent or severe side effects; one woman stopped taking the seeds in order to conceive and delivered a healthy baby, suggesting that the anti-fertility effect of WCS is temporary and reversible. It seems that extreme hormonal fluctuations, such as giving birth and going off of hormonal birth control, decrease the reliability of WCS. The author evaluates a 98% success rate, based on one ovulation per month per women for the time elapsed during the exploration. Mechanism of action is not confirmed, but according to Ayurvedic medicine, the seeds make the “ovum bitter to the sperm”. Bennett speculates that the same properties that help move out stones and gravel in the body could cause WCS to treat a fertilized, yet un-implanted egg as an obstruction to be removed and then stimulate its move out of the uterus. She suggests that it be used with a more familiar form of contraception for at least the first month, taking note of any physical or emotional changes.

She concludes that WCS is an excellent form of contraception, especially for women who pay attention to their bodies’ cycles. There is a reported possible dose dependence; lower doses may enhance fertility while higher doses prevent implantation. The more reliable and safest of the three methods seemed to be taking 1 tsp chewed WCS before, during, and after ovulation for 7-8 days.

*Bennett and Schuler, 2011*

This is a more recent grassroots exploration on wild carrot as a contraceptive. 30 women participated between the ages of 18 and 50. They each were asked to take wild carrot tincture - 15 drops of seed and 15 drops of flower, every 8 hours, 3 times after each occasion of intercourse. The participants recorded 731 occasions of intercourse (not including when they used another method of contraception in addition to wild carrot), of which 160 were during fertile phases. Fertility was measured by counting 4-5 days prior to the best guess at her ovulation and up to 3 days after. In total, 9 pregnancies were recorded, which equals a 94.375% contraceptive success rate.

One woman who conceived was immediately physically uncomfortable, with shorter and shorter cycles each month. It was suggested that this might not be the right contraceptive method for her. A pregnancy occurred for a person who has had 5 previous unintended pregnancies, all while using...
contraception. One person was chewing the seeds, and they were left outside for several weeks, exposed to
the weather; she also was seriously considering having a baby with her partner. One person became
pregnant on month eight, after using it for a year previous to the exploration; she started spotting before
and after menstruation, and there was a mixed intention regarding conception and contraception. Four
people who became pregnant were not taking wild carrot as suggested, taking the first dose up to 3 days
after intercourse during ovulation. One person who became pregnant didn’t confirm when she took wild
carrot relative to conception.

All of the pregnancies confirm the following hypotheses: wild carrot must be used in a timely way,
approximately 8 hours after intercourse; it shouldn’t be solely relied upon after coming off of hormonal
medications until cycles are regular for three months; highly fertile people should use a combination of
methods; people who experience cycle changes or physical discomfort as a result of wild carrot should not
rely on it; and, intention matters. It has the highest success rate when used in a timely way and with clear
intention.

The opinion of the authors is that “other methods are as good as wild carrot, but that none is better.
If you are crystal clear with carrot she responds crystal clearly. If you are ambivalent, than anything goes.
She can help you hold a life and she can help you release potential life. But it has to be your decision. It
isn’t just done for you. You (and your partner) need to be conscious. Becoming more and more familiar
with your body’s fertility signs … is part of the beauty of allying with wild carrot for natural, conscious
contraception.”

See “preparation and dosage” section for the suggested dosage methods.141

**Potential Uses Extrapolated from Pharmacology:**

Potentially central nervous system and hormone secretion affects.142

Anti-microbial against a range of bacteria and fungi, such as *Staphylococcus aureus, Escherichia coli, Bacillus
cereus, Citrobacter freundii,* and *Lactobacillus plantarum.*143

Actions to consider based on its constituents, research and uses: 5-alpha-reductase inhibitor (anti-
androgen), 5-lipoxygenase-inhibitor (prevents EFAs from being converted into leukotrienes), abortifacient,
acaricide (kills ticks and mites), weak ACE-inhibitor (angiotensin-converting-enzyme inhibitor, used in
treatment of hypertension and congestive heart failure), analgesic, anesthetic, anthelmintic, antiadrenergic
(inhibits signals of epinephrine and norepinephrine), antiagregant (decrease platelet aggregation),
angiogenic (inhibits growth of new blood vessels, used in treating cancer), antiarthritic, antiasthmatic,
antiatherogenic (protects against atherosclerosis, hardening of arteries), anticancer, anticonvulsant,
antiedemic, hypotensive, antihistaminic, hypocholesterolemic, hypoglycemic, anti-inflammatory, antilithic,
antimalarial, antioxidant, antiplaque, antiprostaglandin, antirheumatic, antiseptic, antispasmodic,
antimicrobial (antistaphylococcic, antistreptococcic, antibacterial, antiviral), antitumor (colon, breast,
bladder, cervix, colon, GI, kidney, liver, lung, ovary, pancreas, prostate, skin, stomach, thyroid),
antiucler/antiulcerogenic, calcium-antagonist (anti hypertensive, alter heart rate, prevent cerebral vasospasm,
reduce angina), anti-candida, contraceptive, COX-1 and COX-2 inhibition, CYP450 1A1 and 1A2
inhibitor, cytotoxic, estrogenic, expectorant, hepatoprotective, insecticide, leukotriene inhibitor,
prostaglandin inhibitor, TNF-alpha-inhibitor, vasodilator, vermifuge.144
Safety:

Avoid use in pregnancy. Wild carrot can increase PMS and bleeding. Careful w/ kidney damage\textsuperscript{145} and in acute kidney infection due to the irritation of volatile oils.\textsuperscript{146}

May cause dermatitis and blisters. Fatalities have occurred from mistaking deadly members of the Apiaceae, such as Poison Hemlock, for wild carrot (see “identification” section).\textsuperscript{147}

Brinker suggests to avoid using seed preparations in pregnancy due to its emmenagogue, abortifacient and uterine stimulant actions. He says to avoid in kidney failure due to the irritating volatile oils, and he speculates to avoid its use in diabetes mellitus due to the diuretic action of the seeds and the hypoglycemic effect of the roots on mice.\textsuperscript{148}

As a contraceptive, Robin Rose Bennett suggests that“Women should probably not depend on this traditional use of wild carrot if they or their partners are conflicted about having a baby, or if the woman is taking hormonal medications, is lactating, doesn’t yet have a regular cycle, or is recently off the pill or any other hormonally potent medication. This project strongly suggests that it is also contraindicated for any woman who experiences rapid changes in her menstrual cycle or breast tenderness when taking wild carrot.”\textsuperscript{149} Some people may experience vaginal dryness when chewing the seeds, but not when taking tincture or tea.\textsuperscript{150}

Bennett also says that wild carrot as a contraceptive seems to be most effective when taken less frequently after intercourse or during ovulation. It seems to be less effective as a contraceptive if taken daily. It’s important for gut flora to be happy and healthy – caution with dysbiosis or when using antibiotics. There have been no problems with fertility reported after stopping the use of wild carrot, many people have delivered healthy babies following the use of wild carrot.\textsuperscript{151}

In Chinese Medicine, this herb is considered to have low toxicity with reports of adverse reactions only after ingestion of about 45g. Symptoms may include: mild headache, nausea, tinnitus and abdominal pain. The symptoms disappear without treatment.\textsuperscript{152}

See “Wild Carrot Seed as a Contraceptive” in the Clinical Uses section for more information on safety and contraindications.

Preparation and Dosage:

Key: QD = per day; BID = 2x/day, TID = 3x/day; ggt = drops; one dropper full = ~1ml; EtOH = alcohol

As an oral contraceptive:

In the 2011 exploration by Bennett and Schuler, they recommend taking the first dose approximately eight hours after intercourse. Especially during fertile phases of the cycle, repeat the dose twice more, about every eight hours. They recommend for each dose one of the following two options:

- one teaspoon of ground seeds taken in water, honey or nut butter. Don’t grind more than one weeks
worth of seeds at one time.

- 15 drops of flower and 15 drops of seed tincture

in her article “Wild Carrot (Daucus Carota): A Plant for Conscious, Natural Contraception,” Robin Rose Bennett recommends taking Daucus carota 1-3 times after unprotected sexual intercourse, taking the first dose within 8-12 hours and then repeating that dosage twice more every 8 to 12 hours, within a minimum of 24 hours and a maximum of 72 hours. One of the following dosage options is to be repeated as stated above:

- Fresh flower tincture, 1-2 ml (25-60 ggt) alone or mixed with seed tincture, in hot or cold water, or added into wild carrot seed tea.

- 3-6 whole fresh flower heads infused in 8oz boiling water, steep covered for 15-60 minutes, drink one cup

- 2-3 dry flower heads infused in 8oz boiling water, steep covered for 15-60 minutes, drink one cup.

- Fresh seed tincture, 1/2-2 ml (13-60 ggt) taken in water, alone, mixed with the flower tincture, or added to a cup of the flower tea.

- Dried seeds, ground just before use, 1 tsp stirred into a glass of cold water. Dried or fresh seeds can be chewed, 1 tsp per dose. This method has the longest historical record, but may cause vaginal dryness.

- Dried seeds, lightly ground in a mortar and pestle, 1 tbsp per dose, just before use and brewed for tea, steeping them covered in a cup of boiling water for 15-30 minutes.

Other notes: It’s important, if using dried seeds, to grind only a maximum of 3 days worth at a time, and store them in an airtight, glass container. The tincture you use, whether making it yourself or purchase it, should smell strongly of carrot. Bennett makes her tincture using simpler’s method in 100 proof vodka. It is crucial to chew or crush the seeds, to release their oil(s). Whole seeds will not be as effective, as they can pass through the system without releasing the volatile oils.

Jeunet suggests chewing 1 tsp of seeds after unprotected sex, BID for seven days. In addition, 1 tsp can be taken daily during ovulation.

Schuler recommends a higher alcohol (80% EtOH) extract. If taking just the seeds (not extracted in alcohol), it is recommended to take ½-1 tsp with an oily delivery.

Phyllis Light shares a traditional Appalachian birth control method: they make tea from 2-3 fresh flower heads depending on the size of the flowers, steeped from 5-30 minutes, drinking 1 cup within one day after sexual intercourse.

Sage-Femme Collective recommends 1 tsp or 3g of seeds in a glass of water, drunk the day after unprotected sex, or the same dose chewed daily during ovulation for up to one week. They say to tincture the dried seeds at 1:5, 60% EtOH, dose 20-60ggt QD or BID the day after unprotected sex.

Lise Wolff uses the tincture of entire wild carrot seed heads, 7 drops TID for 3 days after sexual intercourse. She has found this method to be almost 100% reliable.

As a reproductive tonic:
Masé: 1/2-2ml QD for fertility enhancement for a few months. 50-60% EtOH tincture.

General, other or unspecified:
Hoffman: pour one cup boiling water over 1 tsp dried herb, infuse for 10-15 minutes, TID. Infuse 1/3-1
tsp of seeds in a cup of water. Tincture 1-2ml TID, 1:5 in 25% EtOH tincture.

Wood: Use high alcohol tincture of the green seeds. Only a few drops are necessary. Tommie bass collects the top just before they go to seed. Lise Wolff uses the seeds before they are fully mature.

Moore: seeds in standard infusion (32:1 hot water to dried herb by weight, infused for 20-30 mins), 2-6 oz BID. Tincture 1:5 60% EtOH, 20-60 drops up to BID.

Grieve: infuse 1 oz herb in a pint of boiling water, take in wineglassful doses; take 1/3-1 teaspoon of bruised seeds per dose. Frequency not specified.

To kill parasites

The Chinese Medicine dose for Daucus carota seed is 3-9g QD, maximum of 12g QD.

Combinations and Similars:

Hoffman

UTIs: combine with bearberry (uva ursi) and yarrow.

Kidney stones: combine with hydrangea, gravel root, or pellitory-of-the-wall.

Dr. John Christopher

Dropsy: 1 ¼ oz Wild Carrot (Daucus carota) 1 ½ oz Haircap moss (Polytrichum juniperum), 1 oz crushed watermelon seeds (Citrus lanatus; C. vulgaris). Simmer in 3 pints of water for 20 minutes, strain. Take 2 tbsp every 2 hours.

Cystitis: ½ oz each wild carrot (Daucus carota), uva ursi (Arctostaphylos uva-ursi), juniper berries (Juniperus communis), tansy (Tanacetum vulgare), licorice root or juice (Glycyrrhiza glabra), buchu (Agathosma betulina; A. Crenulata; Diosma ericoides), 1 tsp. cayenne (Capsicum frutescensl C. minumum). Simmer slowly the first five herbs for 20 minutes in 1 quart of water. Strain hot over the cayenne and buchu. Take 2 fluid ounces 4-6 x/day.

Inflammation of the kidneys: ½ oz each wild carrot, pellitory of the wall (Parietaria officinalis), uva ursi, dandelion root (Taraxacum officinale), marshmallow root (Althaea officinalis), white poplar bark (Populus tremuloides), 1 tsp cayenne. Simmer slowly the first six herbs in 1 quart of water down to 1 pint, strain over the cayenne. Take 3 tbsp every hour until patient is eased, then every 2 hours.

Robin Rose Bennett

“Pee Tea” urinary system tonic (kidney, bladder, prostate, urethra): dried plants of cornsilk (4 parts), goldenrod (2 parts), wild carrot seed (1 part). Instructions: bruise the wild carrot seeds and mix all the herbs together. Use 2 tsp of herbs per cup of tea, steep for 30 minutes.

Emmenagogue: combined with Cronewort/Mugwort (Artemisia vulgaris).

Chinese Medicine

Roundworms: with Mume fructus (wu mei), Arecae Semen (bing lang), Coptidis Rhizoma (huang lian), and Omphalia (lei wan).

For Vaginitis, made into a wash and applied externally: with Stemonae Radix (bai bu), Sophorae flavescentis Radix (ku shen), and Dictamni Cortex (bai xian pi).
**Miscellaneous:**

The conventional carrot is a variation of this species. The garden variety developed over many centuries to be larger, sweeter and less pungent. The name Queen Anne’s Lace refers to the lacy white flower.\(^{175}\)

Boiled roots of the cultivated carrot are useful for ulcers, septic sores, carbuncles, degenerate abscesses; malignant, cachetic, scrophulus sores; it helps to cleanse, and form new granulation tissue.\(^{176}\) Carrots are also valued in threadworms, the treatment being nothing but grated carrots eaten for one or two days.\(^{177}\)

The seeds add a nice flavor to malt liquor.\(^{178}\)

Scott Cunningham describes the magical powers of Carrot seed (not specifying wild or cultivated) as fertility and lust. He associates it with the masculine gender, the planet Mars, the Fire element. The magical uses are: the seeds, when eaten, they help women to become pregnant; the carrot, when eaten, promotes lust and cures impotence.\(^{179}\)

As a spiritual ally, Bennett describes Wild carrot as “a shape-shifting ally helpful for learning the art of shape-shifting, flowing with change, healing sexual confusion, supporting creativity, and learning to focus intention, while developing playfulness and exuberance; it opens the third eye and crown chakras, and increases awareness of energy and oneness.”\(^{180}\)

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1 Grieve, p 165  
2 Kress  
3 Khare, p 204  
4 Masé  
5 Grieve, p 165  
6 Brinker, p 333  
7 Cunningham, p 74  
8 Bensky et al., p 1004  
9 Sage-Femme, p 257  
10 Kress  
11 Brinker, p 333  
12 Khare, p 204  
13 Bensky et al., p 1004  
14 Masé  
15 Hoffman 1990, p 240  
16 Dickinson, p 127  
17 Wood 1997, p 227  
18 Grieve, p 165  
19 Dickinson, p 127  
20 Bennett 1992, p 1  
21 Remington et al, p 231  
22 Masé  
23 Masé  
24 Newcomb  
25 Bennett Wisewoman.  
26 Anon., sisterzeus.com  
27 Anon., sisterzeus.com  
28 Bennett Wisewoman  
29 Vertolli  
30 Vertolli  
31 Vertolli
32 Bennett 1992, p 8
33 Bennett and Schuler, p 5
34 Bennett Wisewoman
35 Bennett Wisewoman
36 Horizon Herbs
37 Masé
38 Bensky et al., p 1004
39 Masé
40 Bensky et al., p 1004.
41 Masé
42 Vertolli
43 Sage-Femme, p 257
44 Masé
45 Vertolli
46 Vertolli
47 Hoffman 1990, p 240
48 Hoffman 2003, p 542
49 Masé
50 Wood 1997, p 228
51 Wood 2011, p 235
52 Griee, p 165
53 Bensky et al., p 1004
54 Bennett, Wisewoman
55 Masé
56 Hoffman 1990, p 240
57 Hoffman 2003, p 542
58 Vertolli
59 Wood 1997, 229-30
60 Wood 2011, p 235-6
61 Moore 1997
62 Wood 2011, p 235-6
63 Griee, p 165
64 Hook
65 Masé
66 Vertolli
67 Hook
68 Wood 1997, p 229
69 Wood 2011, p 235
70 Bennett 2014, p 359
71 Schuler
72 Khare, p 204
73 Jeunet, p 23
74 Bennett, Wisewoman
75 Bennett 1992, p 10
76 Bennett 2014, p 355
77 Bennett Wisewoman
78 Bennett Wisewoman
79 Bennett 2014, p 356
80 Schuler
81 Bennett, Wisewoman
82 Bennett and Schuler
83 Bennett 2014, p 357
84 Sage-Femme, p 259
85 Sage-Femme, p 259
86 Bennett 2014, p 354
87 Bensky et al., p 1004
88 Masé
89 Wood 2011, p 235-6
90 Hoffman 1990, p 240
91 Vertolli
92 Wood 1997, p 229-30
93 Wood 2011, p 235-6
94 Grieve, p 165
95 Wood 2011, p 235-6
96 Wood 2011, p 235-6
97 Masé
98 Grieve, p 165
99 Hook
100 Bensky et al., p 1004.
101 Wood 2011, p 235-6
102 Kaminski, p 166
103 Anon, sisterzeus.com
104 Bennett, Wisewoman
105 Riddle 1994
106 Riddle 1997, p 51
107 Felter and Lloyd
108 Masé
109 Remington et al., p 231
110 Scudder
111 Cook
112 Masé
113 Bensky et al., p 1005
114 Maxia et al.
115 Huang, p 438
116 Khare, p 205
117 Masé
118 Hoffman 2003, p 542
119 Remington et al., p 231
120 Masé
121 Maxia et al.
122 Ahmed et al.
123 Khare, p 205
124 Remington et al., p 231
125 Khare, p 205
126 Riddle 1997, p 50 and Bennett 1992, p 9
127 Masé
128 Weiss p 317
129 Masé
130 Masé
131 Sharma
132 Kong et al.
133 Sage-Femme, p 259
134 Kaliwal
135 Bhatnagar
136 Majumder et al.
137 Kumarasamy et al.
138 Ahmed et al.
139 Maxia et al.
140 Bennett 1992
141 Bennett and Schuler