

Bitter Orange (*Citrus aurantium*)

Common Name: Chih-shih.

Description: To put the bitter orange to medicinal use you use the whole, unripe fruit of a mandarin orange. The peel can also be used.

Properties: Bitter Orange has synephrine in it, which acts as a decongestant. It is also used to help in circulation.

Uses: This herb can be used to help treat anemia, prevent a heart attack, heat stress, high blood pressure, indigestion, liver cancer and obesity.

Doses: Look for bitter orange in tea form.

Warnings: If you are pregnant, exercise extreme caution while taking bitter orange because it can cause contractions. Do not use this herb in conjunction with painkillers. Also bitter orange can cause sensitivity to light.

## Also known as

*Citrus aurantium*, Seville orange, sour orange

## Introduction

The bitter orange is native to Africa, Arabia, and Syria. It was brought to the Mediterranean and southern Europe in 1200 C.E. by traders. It is an evergreen tree with long spines and incredibly fragrant flowers. The membranes and pulp of the fruit, however, are very sour and bitter (hence the name). It is now widely cultivated in China, India, and the U.S. Herbalists in Europe began using bitter orange for stomach complaints, nervous conditions, gout, sore throat, and as a sedative. Currently, the British Pharmacopoeia lists it as a bitter tonic. In traditional Chinese medicine, it is used as an ingredient in several different formulas, most of them dealing with coughs, colds, indigestion, nausea, and even organ prolapse. Contemporary Chinese practitioners inject it for the treatment of anaphylactic shock and shock syndrome. It is also used as a flavoring agent in many foods, and for its fragrance in bath and body care products.

## Parts Used

The entire fruit, including the peel, fresh flowers, and the leaves and twigs, are all used for various commercial products.

## Typical Preparations

Bitter orange peel, and the oil derived from it, is used in many different things. As a flavoring agent it can be used in a wide variety of foods, and is used in liqueurs (most notably Triple Sec), deserts, candy, gelatins and puddings. It is used to cover up the taste of pharmaceuticals, as well as being a key ingredient in marmalade. The peel is used in teas, especially those made for digestive complaints.

## Summary

Bitter orange peel has anti-inflammatory, anti-bacterial, and anti-fungal properties. The German E

Commission has approved its use for loss of appetite, dyspeptic ailments and stomach complaints. There is some speculation and testimony that bitter orange peel can be used for weight loss and as a nasal decongestant, but according to the German Commission there still need to be clinical trials done before this can be emphatically established. Neroli and Petitgrain essential oils are both derived from the bitter orange tree, specifically from the fresh flowers (Neroli), and the leaves and twigs (Petitgrain).

## Precautions

Photosensitization is possible in some individuals, but this has mainly been found in the whole raw fruit. It is not recommended during pregnancy, and it should not be used by children.

# Orange Peel and Powder Profile

## Also known as

Citrus sinensis, Sweet Orange, Valencia Orange, Ruby Orange, Navel Orange.

## Introduction

Peels from any member of the Sweet Orange family have been used in Traditional Chinese Medicine at least since the writing of the Divine Husbandman's Classic of the Materia Medica, written in the second century BC. The little known fact is that there are substantially more enzymes, flavonoids, and phytonutrients in the peel of the Orange rather than the fruit. The peel is where all the essential components accumulate and they may be found in three main sections of the peel; the flavedo, albedo, and oil sacs. It is believed that the Sweet Orange has its origins in China and from here it has been cultivated in virtually every country across the globe with most of the current production coming from Florida, California and parts of the Mediterranean.

## Constituents

Vitamin C, Vitamin B1, Choline, Folic Acid, over 60 known flavonoids, d-limonene, alpha-carotene, beta-carotene, aldehydes, numerous minerals and vitamins.

## Parts Used

The peel of the fruit picked at its ripe stage and then dried.

## Typical Preparations

The cut peel is traditionally used as a tea, and the powdered peel is used to add a sweet, fizzy flavor to drinks. Many cosmetics call for peel in either cut form or as a powder. Its light flavor makes it easy to add into tea blends, and the peel can also be incorporated into jams, jellies, stir-fry dishes and many

other culinary creations.

## Summary

Orange peel acts as anti-inflammatory due to the high flavonoid content, and as an anti-bacterial and anti-microbial agent. One of the major components of Orange Peel (d-limonene) has been reported to have anti-carcinogenic activities and further studies are being conducted. It is used in traditional Chinese Medicine to "reduce accumulation," whether gas in the intestine, pressure from cramping, stool in the bowels, phlegm in the lungs and throat, or "too much blood energy" resulting in high blood pressure.

## Precautions

Women who are pregnant should not take Orange peel and there have been a few cases where children developed intestinal colic. Large doses may cause photo-toxicity in some individuals.

# Orange, Sweet

**Botanical:** *Citrus aurantium* (LINN.), var. *dulcis*

**Family:** N.O. Rutaceae

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---**Synonyms**---*Citrus vulgaris*. *Citrus Bigaradia*. *Citrus aurantium amara*. Bigaradier. Bigarade Orange. Bitter Orange. Seville Orange. (Sweet) Portugal Orange. China Orange. *Citrus dulcis*.

---**Parts Used**---Fruit, flowers, peel.

---**Habitat**---India, China. Cultivated in Spain, Madeira, etc.

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---**Description**---Both common and official names are derived from the Sanskrit *nagaranga* through the Arabic *naranj*.

It is a small tree with a smooth, greyishbrown bark and branches that spread into a fairly regular hemisphere. The oval, alternate, evergreen leaves, 3 to 4 inches long, have sometimes a spine in the axil. They are glossy, dark green on the upper side, paler beneath. The calyx is cup-shaped and the thick, fleshy petals, five in number, are intensely white, and curl back.

The fruit is earth-shaped, a little rougher and darker than the common, sweet orange: the flowers are more strongly scented and the glands in the rind are concave instead of convex.

The first mention of oranges appears in the writings of Arabs, the time and manner of their first cultivation in Europe being uncertain.

The small, immature fruits are sometimes used under the name of *Orange berries* for flavouring Curaçoa. They are the size of a cherry and dark greyish-brown in colour. Formerly an essence was extracted from them.

The peel is used both fresh and dried. Much is imported from Malta, cut more thinly than that prepared in England.

In Grasse the blossoms are candied in large quantities.

Oil of petit grain is made from the leaves and young shoots.

The volatile oil of the bitter Orange peel is known as Oil of Bigarade, and Sweet Orange oil as Oil of Portugal. For methods of extraction, see [LEMON](#).

Orange oil is one of the most difficult to preserve, the most satisfactory method being to add 10 per cent of its volume of olive oil.

The flowers yield by distillation an essential oil known as 'Neroli,' which forms one of the chief constituents of Eau-de-Cologne. A pomade and an oil are also obtained from them by maceration.

The oil from Sweet Orange blossoms is found in commerce under the name of 'Neroli petalae.' Being far less fragrant it only fetches half the price of neroli oil and on that account is frequently used to adulterate the true neroli oil.

The largest Bigarade-tree plantations are to be found in the South of France, in Calabria and in Sicily. The centre of the industry of neroli oil is the South of France, where the bitter Orange is extensively cultivated for that purpose alone. The tree requires a dry soil with a southern aspect. It bears flowers three years after grafting, increasing every year until it reaches its maximum, when it is about twenty years old. The quantity depends on the age and situation, a full-grown tree yielding on an average 50 to 60 lb. of blossoms. One hundred Orange trees, at the age of ten years, will occupy nearly an acre of land, and will produce during the season about 2,200 lb. of Orange flowers. The flowering season is in May and the flowers are gathered two or three times a week, after sunrise. When the autumn is mild and atmospheric conditions are favourable, flowering takes place in October, and this supplementary harvest lasts until January, or till a frosty morning stops the flowering. These autumn flowers have much less perfume than those of the spring and the custom is to value them at only one-half the price of May flowers. The Bitter Orange and Edible Orange trees bear a great resemblance to each other, but their leaf-stalks show a marked difference, that of the Bitter Orange being broadened out in the shape of a heart. The yield of oil is greatly influenced by the temperature and atmospheric conditions prevailing at the time of gathering. In warm weather it may amount to as much as 1,400 grams per 100 kilogrammes of flowers, but under adverse conditions, such as damp, cool and changeable weather, considerable diminution is experienced. Generally the largest yields are obtained at the end of the flowering season, on account of the warmer temperature.

The method most followed for extraction of the oil is by distillation, which yields a higher percentage of oil from the flowers than maceration or absorption in fats and volatile solvents. The flowers are distilled immediately after gathering, the essential oil rising to the surface of the distillate is drawn off, while the aqueous portion is sold as 'Orange Flower Water.' Orange flower water is being increasingly used in France by biscuit-makers to give crispness to their products, and some of the English biscuit-makers have also adopted it for this purpose.

There is a marked difference in the scent of the oils obtained by the different processes. Neroli obtained by distillation has quite a different odour from the fresh Orange flower; the oils obtained by solvents and by maceration and enfleurage are truest to the scent of the natural flower. From 100 kilogrammes of flowers 1,000 grams of oil are obtained; by volatile solvents, 600 grams; by maceration, 400 grams; and by enfleurage, only about 100 grams of oil.

Orange Flower Oil as obtained from pomatum, slightly modified with other extracts, can be employed to make 'Sweet Pea' and 'Magnolia' perfumes, the natural odours of which it slightly resembles.

The use of Orange-blossom as a bridal decoration is neither long-established nor indigenous, as it was introduced into this country from France only about a hundred years ago.

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---**Constituents**---The peel of var. *Bigaradia* contains volatile oil, three glucosides, hesperidin, isohesperidin, an amorphous bitter principle, Aurantiumarin, aurantiumaric acid, resin, etc.

The ethyl ether of -naphthol, under the name of *nerolin*, is an artificial oil of neroli, said to be ten times as strong.

*Oil of Orange Flowers* is:

'soluble in an equal volume of alcohol, the solution having a violet fluorescence and a neutral reaction to litmus paper. The specific gravity is 0.868 to 0.880 at 25 degrees C. (77 degrees F.).

When agitated with a concentrated solution of sodium bisulphate it assumes a permanent purple-red colour.'

It must not be coloured by sulphuretted hydrogen.

*Oil of Sweet Orange Peel* contains at least 90 per cent o-limonene, the remaining 10 per cent being the odorous constituents, citral, citronellal, etc. It is a yellow liquid with the specific gravity 0.842 to 0.846 at 25 degrees C. (77 degrees F.).

*Oil of Bitter Orange Peel*, a pale yellow liquid, is soluble in four volumes of alcohol, the solution being neutral to litmus paper. The specific gravity is 0.842 to 0.848 at 25 degrees C. (77 degrees F.). The odour is more delicate than that of the Sweet Orange.

Fuming nitric acid gives a dark green colour to sweet peel and a brown to the bitter.

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---**Medicinal Action and Uses**---The oil is used chiefly as a flavouring agent, but may be used in the same way as oil of turpentine in chronic bronchitis. It is non-irritant to the kidneys and pleasant to take.

On the Continent an infusion of dried flowers is used as a mild nervous stimulant.

The powdered Bitter Orange peel should be dried over freshly-burnt lime. For flavouring, the sweet peel is better, and as a tonic, that of the Seville or *Bigaradia* is preferred.

A syrup and an elixir are used for flavouring, and a wine as a vehicle for medicines.

The compound wine is too dangerous as an intoxicant, being mixed with absinthium, to be recommended as a tonic.

---**Preparations of Bitter Orange**---Syrup, B.P., 1/2 to 1 drachm. Tincture, B.P. and U.S.P., 1/2 to 1 drachm. Infusion of Orange, B.P., 4 to 8 drachms. Infusion of Orange Compound, B.P., 4 to 8 drachms. Compound spirit, U.S.P., 1 to 2 drachms. Syrup, B.P., 1/2 to 1 drachm. Wine, B.P., a wineglassful.

**---Preparations of Sweet Orange---**Syrup, B.P. and U.S.P., 1/2 to 1 drachm. Tincture, U.S.P., 1/2 to 1 drachm.