The name "bitter orange", also known as Seville orange, sour orange, bigarade orange, and marmalade orange, refers to a citrus tree (Citrus aurantium) and its fruit. Many varieties of bitter orange are utilized for their essential oil, which is used in perfume and as a flavoring. Bitter orange is also employed in herbal medicine as a stimulant and appetite suppressant. Slivers of the rind are used to give marmalade its characteristic bitter taste.

After the U.S. Food and Drug Administration banned the herbal stimulant ephedra, manufacturers substituted bitter orange in many herbal weight-loss products,[2] despite similar concerns about potential serious side effects and lack of effectiveness.[3] [4] In a recent article by the publication Consumer Reports, it was furthermore reported that use of bitter orange may be associated with "fainting, heart-rhythm disorders, heart attack, stroke, [and] death".[5]
Varieties

- *Citrus aurantium* subsp. *amara* is a spiny evergreen tree native to southern Vietnam, but widely cultivated. It is used as grafting stock for citrus trees, in marmalade, and in liqueur like triple sec, Grand Marnier and Curaçao. It is also cultivated for the essential oil expressed from the fruit, and for neroli oil and orange flower water, which are distilled from the flowers.

- Seville orange (or bigarade) is a widely-known, particularly tart orange which is now grown throughout the Mediterranean region. It has a thick, dimpled skin, and is prized for making marmalade, being higher in pectin than the sweet orange, and therefore giving a better set and a higher yield. It is also used in compotes and for orange-flavored liqueurs. Once a year, oranges of this variety are collected from trees in Seville and shipped to Britain to be used in marmalade.[6] However, the fruit is rarely consumed locally in Andalusia.[7]

- Bergamot orange, *C. aurantium* subsp. *bergamia* is cultivated in Italy for the production of bergamot oil, a component of many brands of perfume and tea, especially Earl Grey tea.

- Chinotto, from the myrtle-leaved orange tree, *C. aurantium* var. *myrtifolia*, is used for the namesake Italian soda beverage. This is sometimes considered a separate species.

- Daidai, *C. aurantium* var. *daidai*, is used in Chinese medicine and Japanese New Year celebrations. The aromatic flowers are added to tea.[8]

- Wild Florida sour orange is found near small streams in generally secluded and wooded parts of Florida. It was introduced to the area from Spain.[8]

Uses

In cooking

The unripe fruit, called narthangai, is commonly used in Southern Indian cuisine, especially in Tamil cuisine. It is pickled by cutting it into spirals and stuffing it with salt. The pickle is usually consumed with thayir sadam. The fresh fruit is also used frequently in pachadis.

The juice from the ripe fruit is also used as a marinade for meat in Nicaraguan, Cuban, Dominican and Haitian cooking.

The peel can be used in the production of bitters.

The Belgian Witbier (white beer) is a beer made from wheat spiced with the peel of the bitter orange.

The Finnish and Swedish use bitter orange peel in gingerbread (*pepparkakor*) and in mämmi. It is also used in the Nordic mulled wine glögg.

In Greece and Cyprus the *nerantzí* or *kitrómilon* respectively, is one of the most prized fruits used for spoon sweets, and the *C. aurantium* tree (*nerantzíá* or *kitromiliá*) a popular ornamental tree.

In Iran the juice is used as fish marinade. The blossom is also used to flavor tea and jam.

In medicine

The extract of bitter orange (and bitter orange peel) has been used in dietary supplements as an aid to fat loss and as an appetite suppressant, although in traditional Chinese medicine it is always prescribed in concert with other support herbs, not alone. Bitter orange contains the tyramine metabolites N-methyltyramine, octopamine and synephrine,[9] substances similar to epinephrine, which acts on the α1 adrenergic receptor to constrict blood vessels and increase blood pressure and heart rate.[10][11]

The American Botanical Council[12] has issued a press release on their review of Bitter Orange refuting these claims and stating that "No credible adverse events have been directly attributed to bitter orange, or its primary protoalkaloid, p-synephrine, in association with oral ingestion."[13]
Following bans on the herbal stimulant ephedra in the U.S., Canada, and elsewhere, bitter orange has been substituted into "ephedra-free" herbal weight-loss products by dietary supplement manufacturers.[2] While bitter orange has not undergone formal safety testing, it can cause the same spectrum of adverse events as ephedra.[13] Case reports have linked bitter orange supplements to strokes,[15] angina,[9] and ischemic colitis.[17]

The National Center for Complementary and Alternative Medicine found that "there is currently little evidence that bitter orange is safer to use than ephedra."[4] There is no evidence that bitter orange is effective in promoting weight loss.[3]

Following the presentation of a healthy young man with a myocardial infarction (heart attack), a case study and subsequent literature review found that the makers of "nutritional supplements" who replaced ephedrine with its analogs p-synephrine and/or p-octopamine from "bitter orange" had in effect simply found a loophole in the FDA's April 2004 regulation banning ephedra in those supplements by substituting a similar substance the regulation did not address, while permitting them to label the products as "ephedra-free".[18]

**Drug interactions**

Bitter oranges may seriously interact with drugs such as statins in a similar way to grapefruit.[19]

**Other uses**

This orange is used as a rootstock in groves of sweet orange.[8] The fruit and leaves make lather and can be used as soap.[8] The hard white or light yellow wood is used in woodworking and made into baseball bats in Cuba.[8]

**References**


**External links**

- Bitter Orange (http://nccam.nih.gov/health/bitterorange/): Information from the National Center for Complementary and Alternative Medicine
- Citrus Aurantium listed in ingredients info (Beverly Hills Nutraceuticals) (http://www.beverlyhillsnutraceuticals.com/research2009/ingredientinfo.html)

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