Physalis peruviana

Physalis peruviana (*physalis* = bladder) is the plant and its fruit, also known as **Cape gooseberry** (South Africa), **Inca berry**, **Aztec berry**, **golden berry**, **giant ground cherry**, **African ground cherry**, **Peruvian groundcherry**, **Peruvian cherry**, ***pok pok*** (Madagascar), ***poha*** (Hawaii), ***ras bhari*** (India), ***aguaymanto*** (Peru), ***uvilla*** (Ecuador), ***uchuva/ochuva*** (Colombia), ***harankash*** (Egypt), ***amour en cage*** (France, French for *love in a cage*), and sometimes simply **Physalis** (United Kingdom).[2][3] It is indigenous to South America, but has been cultivated in England since the late 18th century and in South Africa in the region of the Cape of Good Hope since at least the start of the 19th century.

1 Characteristics

In green calyx

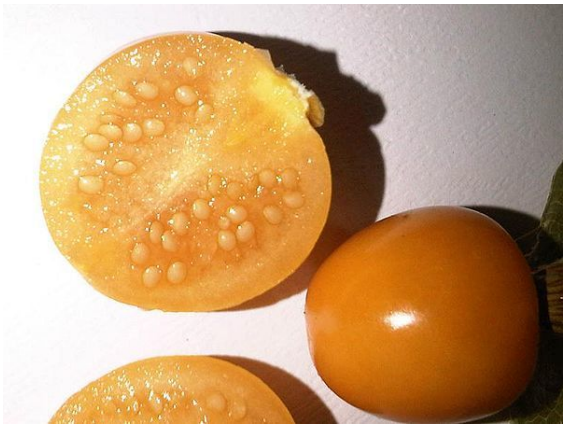
Physalis peruviana is closely related to the tomatillo, also a member of the genus *Physalis*. As a member of the plant family Solanaceae, it is more distantly related to a large number of edible plants, including tomato, eggplant, potato and other members of the nightshades.[4] Despite its name, it is not closely related to any of the cherry, *Ribes* gooseberry, Indian gooseberry, or Chinese gooseberry.

The fruit is a smooth berry, resembling a miniature, spherical, yellow tomato. Removed from its bladder-like calyx, it is about the size of a marble, about 1–2 cm in diameter. Like a tomato, it contains numerous small seeds. It is bright yellow to orange in color, and it is sweet when ripe, with a characteristic, mildly tart flavor, making it ideal for snacks, pies, or jams.[4] It is relished in salads and fruit salads, sometimes combined with avocado. Also, because of the fruit's decorative appearance, it is popular in restaurants as an exotic garnish for desserts.

A prominent feature is the inflated, papery calyx enclosing each berry. The calyx is accrescent until the fruit is fully grown; at first it is of normal size, but after the petals fall it continues to grow until it forms a protective cover around the growing fruit. If the fruit is left inside the intact calyx husks, its shelf life at room temperature is about 30–45 days.

2 Geographic and cultivation origins

Native to high-altitude, tropical Peru, Colombia, and Ecuador, where the fruits grow wild, physalis is casually eaten and occasionally sold in markets. Only recently has the plant become an important crop; it has been widely introduced into cultivation in other tropical, subtropical and even temperate areas.



Cross section

The plant was grown by early settlers of the Cape of Good

Hope before 1807. It is not clear whether it was grown there before its introduction to England, but sources since the mid-19th century attribute the common name, “Cape gooseberry” to this fact.[5][6] A popular suggestion is that the name properly refers to the calyx surrounding the fruit like a cape. This seems however, to be an example of folk etymology or false etymology, because it does not appear in publications earlier than the mid 20th century.

Not long after its introduction to South Africa, *Physalis peruviana* was introduced into Australia, New Zealand, and various Pacific islands.[4]

In South Africa, it is commercially cultivated; canned fruits and jam are common, often exported. It is also cultivated and naturalized on a small scale in Gabon and other parts of Central Africa.

Soon after its adoption in the Cape of Good Hope, it was carried to Australia, where it was one of the few fresh fruits of the early settlers in New South Wales. It is also favored in New Zealand, where it is said “the housewife is sometimes embarrassed by the quantity of berries in the garden”,[4] and government agencies promote increased culinary use. It is grown in India where it is called *ras bhari*.

The Cape gooseberry is also grown in northeastern China, namely Heilongjiang Province, as a seasonal fruit harvested in late August through September. In Chinese pinyin, the fruit is informally referred to as *gu niao*, its Turkish name is *altın çilek*, and in Chinese pinyin *mao suan jiang*.

It is grown in Thailand, particularly on Doi Inthanon, and in Egypt, where it is known locally as *harankash* or as *is-sitt il-mistahiya* (the shy woman), a reference to the papery sheath.

2.1 Marketing

Physalis peruviana (from South America) fruits are marketed in the United States as Pichuberry™, named after Machu Picchu in order to associate the fruit with its supposed origin in Peru and address the fact that this fruit is actually not a gooseberry as the name 'Cape gooseberry' may imply.[7][8]

In Britain the fresh fruit is usually sold as **physalis**, but the dried fruit is sold as **goldenberry**.

3 Nutrients and basic research

According to analyses by the USDA, a 100 g serving of Cape gooseberries is low in calories and contains modest levels of vitamin A, vitamin C, vitamin B1 and vitamin B3, while other nutrients are at low levels (right table).[9]

Basic research on cape gooseberry and its constituents, such as polyphenols and/or carotenoids, includes studies on anti-inflammatory and antioxidant properties.[10][11][12]

One preliminary study found evidence for melatonin content in *Physalis peruviana*.[13]

Calyx open, exposing the ripe fruit

4 Pests and diseases

In South Africa, cutworms are the most important of the many insect pests that attack the cape gooseberry in seedbeds; red spiders after plants have been established in the field; and the potato tuber moth if the cape gooseberry is in the vicinity of potato fields. Hares damage young plants, and birds eat the fruits if not repelled. In India, mites may cause defoliation. In Jamaica, the leaves were suddenly riddled by what were apparently flea beetles. In the Bahamas, whitefly attacks on the very young plants and flea beetles on the flowering plants required control.[4]

In South Africa, the most troublesome diseases are powdery mildew and soft brown scale. The plants are prone to root rots and viruses if on poorly drained soil or if carried over to a second year. Therefore, farmers favor biennial plantings. Bacterial leaf spot (*Xanthomonas* spp.) occurs in Queensland. A strain of tobacco mosaic virus may affect plants in India.[4] In New Zealand, plants can be infected by *Candidatus liberibacter* subsp. *solanacearum*.[14]

5 See also

- Physalis pubescens (a closely related species, sprouts are noticeably less hairy)

6 References

[1] "The Plant List: A Working List of All Plant Species". Retrieved 14 December 2014.

[2] Ad Hoc Panel of the Advisory Committee on Technology Innovation, Board on Science and Technology for International Development, National Research Council (1989). *Lost Crops of the Incas: Little-Known Plants of the Andes with Promise for Worldwide Cultivation*. Washington, D.C.: The National Academies Press. pp. 249–50. ISBN 978-0-309-07461-2.

[3] "Semer et planter le physalis ou amour en cage". Retrieved 6 May 2014.French: amour en cage English: Love in a cage

[4] Morton JF (1987). "Cape gooseberry, *Physalis peruviana* L. in Fruits of Warm Climates". Purdue University, Center for New Crops & Plant Products.

[5] von Mueller, Ferdinand. Select Extra-Tropical Plants Readily Eligible For Industrial Culture Or Naturalization, With Indications Of Their Native Countries And Some Of Their Uses. Pub:Detroit, Mich., G.S. Davis 1884. Page 229. May be obtained from Amazon or downloaded from:http://www.archive.org/details/selectextratropi00muel

[6] Loudon, Jane Wells. Botany for Ladies Or, a Popular Introduction to the Natural System of Plants. Pub: J. Murray (1842)

[7] Galarza, Daniella. "This Goose(berry) is Cooked: Let's Talk About the Pichuberry". Los Angeles Magazine. Retrieved 19 April 2014.

[8] Borowitz, Adam. "Pichuberries (June 21, 2012)". *Article*. Tucson Weekly. Retrieved 6 May 2014.(A package purchased in May 2014 was labelled "Product of Colombia")

[9] "Groundcherries, (cape-gooseberries or poha), raw, 100 g, USDA Nutrient Database, version SR-21". *http://nutritiondata.com". Conde Nast. 2014. Retrieved 7 May 2014.*

[10] Wu, SJ; Tsai JY; Chang SP; Lin DL; Wang SS; Huang SN; Ng LT (2006). "Supercritical carbon dioxide extract exhibits enhanced antioxidant and anti-inflammatory activities of Physalis peruviana". *J Ethnopharmacol* **108** (3): 407–13. doi:10.1016/j.jep.2006.05.027. PMID 16820275. Retrieved 2009-01-01.

[11] Franco, LA; Matiz GE; Calle J; Pinzón R; Ospina LF (2007). "Antiinflammatory activity of extracts and fractions obtained from Physalis peruviana L. calyces". *Biomedica* **27** (1): 110–5. PMID 17546228.

[12] Pardo, JM; Fontanilla MR; Ospina LF; Espinosa L. (2008). "Determining the pharmacological activity of Physalis peruviana fruit juice on rabbit eyes and fibroblast primary cultures". *Invest Ophthalmol Vis Sci* **7** (7): 3074–9. doi:10.1167/iovs.07-0633. PMID 18579763.

[13] Kolar J, Malbeck J (2009). "Levels of the antioxidant melatonin in fruits of edible berry species". *Planta Medica* **75**: 9. doi:10.1055/s-0029-1234847.

[14] Liefting, L. W.; L. I. Ward; J. B. Shiller; G. R. G. Clover (2008). "A New 'Candidatus Liberibacter' Species in Solanum betaceum (Tamarillo) and Physalis peruviana (Cape Gooseberry) in New Zealand". *Plant Disease* **92** (11): 1588. doi:10.1094/PDIS-92-11-1588B. Retrieved 2009-01-01.

7 Text and image sources, contributors, and licenses

7.1 Text

- **Physalis peruviana** *Source:* http://en.wikipedia.org/wiki/Physalis%20peruviana?oldid=650943368 *Contributors:* Delirium, Ellywa, Nohat, Grendelkhan, Fibonacci, Topbanana, Robbot, Alan Liefting, Enochlau, Craig Butz, MPF, Kbahey, Bfinn, Onco p53, DragonflySixtyseven, DanielCD, Zy26, CDN99, Hesperian, Kuratowski's Ghost, Ish ishwar, Stemonitis, SDC, Josh Parris, Rjwilmsi, Jeffmcneill, Eubot, Lemmikkipuu, Gdrbot, Dijan, Badagnani, IceCreamAntisocial, Davidals, Mmcannis, SmackBot, Grey Shadow, EncycloPetey, Hmains, Skizzik, Rkitko, Alanf777, Lambiam, JMK, Meservy, Puffin10, Tau'olunga, WhoSaid?, Marcojim, Stephenjh, Khilker, Indeterminate, Alaibot, Cs california, Thijs!bot, Madbehemoth, Paul144, Natureguy1980, Mrtew, Soulbot, Nono64, Btouburg, Robertgreer, Idiomabot, Chango369w, Davidresseguie, TXiKiBoT, Jalwikip, Cloudswrest, Rocko66, Jaguarlaser, Da Joe, Undead Herle King, MadmanBot, Sean.hoyland, ClueBot, Tlustulimu, Bagworm, Muro Bot, Rui Gabriel Correia, Fgajardo, Avaz, Sdlasky, Kbdankbot, Addbot, CanadianLinuxUser, Angrense, Lightbot, Luckas-bot, Yobot, Citation bot, ArthurBot, Xqbot, Gigemag76, Jolly Janner, GrouchoBot, Nimmolo, Zefr, FrescoBot, GenericBob, LucienBOT, D'ohBot, Masterknighted, Pinethicket, Jonkerz, Glennstadt, Androstachys, EmausBot, John of Reading, Pasube, JonRichfield, Michael Bailes, ClueBot NG, Kimpatriciabax, Amr.rs, ניגעריגער, AhMedRMaaty, Glacialfox, Suejhunt, Shisha-Tom, Khazar2, Sminthopsis84, Tamarack velocity, Ercé, Michaelpop1001, Monkbot and Anonymous: 84

7.2 Images

- **File:Physalis.jpg** *Source:* http://upload.wikimedia.org/wikipedia/commons/9/92/Physalis.jpg *License:* Public domain *Contributors:* ? *Original artist:* ?
- **File:Physalis_fruchthuelle_fcm.jpg** *Source:* http://upload.wikimedia.org/wikipedia/commons/9/97/Physalis_fruchthuelle_fcm.jpg *License:* CC BY-SA 2.5 *Contributors:* Own work *Original artist:* Photograph: Frank C. Müller, Baden-Baden
- **File:Solanales_-_Physalis_peruviana_2.jpg** *Source:* http://upload.wikimedia.org/wikipedia/commons/f/f3/Solanales_-_Physalis_peruviana_2.jpg *License:* CC BY-SA 2.5 *Contributors:* kindly granted by the author *Original artist:* Emőke Dénes
- **File:Uchuva_2005.jpg** *Source:* http://upload.wikimedia.org/wikipedia/commons/8/87/Uchuva_2005.jpg *License:* Public domain *Contributors:* ? *Original artist:* ?

7.3 Content license

- Creative Commons Attribution-Share Alike 3.0