

MACA

Family: Brassicaceae

Genus: Lepidium

Species: meyenii

Common names: Maca, Peruvian Ginseng, Maka, Maca-maca, Maino, Ayak chichira, Ayuk Willku

Part Used: Roots



Maca is a hardy perennial plant cultivated high in the Andean Mountain at altitudes from 11,000-14,500 feet.(1) It has one of the highest frost tolerances among native cultivated species. It has a low-growing, mat-like stem system which at times goes unnoticed in a farmer's field.(2) Its scalloped leaves lie close to the ground and it produces self-fertile small off-white flowers typical to the mustard family which it belongs to. The part used is the tuberous root which is pear shaped, up to 8 cm in diameter and off-white in color. Unlike many other tuberous plants, Maca is propagated by seed.(2) Although it is a perennial, it is grown as an annual, and 7-9 months from planting are required to produce the harvested roots. The area where Maca is found high in the Andes is an inhospitable region of intense sunlight, violent winds and below freezing weather. With its extreme temperatures and poor rocky soil, the area rates among the world's worst farmland, yet over the centuries, Maca learned to flourish under these conditions. Maca was domesticated about 2000 years ago by the Inca Indians(1) and primitive cultivars of Maca have been found in archaeological sites dating as far back as 1600 B.C.(3, 4)

To the Andean Indians, Maca is a valuable commodity. Because so little else grows in the region, Maca is often traded with communities at lower elevations for other staples like rice, corn, and beans. The dried roots can be stored for up to seven years. Native Peruvians have traditionally utilized Maca since before the time of the Incas for both nutritional and medicinal purposes (1) Maca is an important staple in the diets of the people indigenous to the region since it has the highest nutritional value of any food crop grown there. It is rich in sugars, protein, starches, and essential minerals, especially iodine and iron. The tuber is consumed fresh or dried. The fresh roots are considered a treat and are baked or roasted in ashes much like sweet potatoes. The dried roots are stored and later boiled in water or milk to make a porridge. (3, 4, 5) In addition, they are often made into a popular sweet, fragrant, fermented drink called *maca chicha*. (2, 3) In Huancayo, Peru, even Maca jam and pudding are popular.(3) The tuberous roots have a tangy taste and an aroma similar to butterscotch. Maca has been used medicinally for centuries to enhance fertility in humans and animals.(2, 4, 5, 6, 9) Soon after the Spanish Conquest in the South America, the Spanish found that their livestock were reproducing poorly in the highlands. The local Indians recommended feeding the animals Maca and so remarkable were the results that Spanish chroniclers gave in-depth reports.(3) Even Colonial records of some 200 years ago indicate that payments of roughly 9 tons of Maca were demanded from one Andean area alone for this purpose.(4, 5) Its fertility enhancing properties were supported clinically as early as 1961, when researchers discovered it increased the fertility of rats.(7) This energizing plant is also

referred to as Peruvian ginseng, (1, 2, 4) although Maca is not in the same family as ginseng.

The nutritional value of dried Maca root is high, resembling cereal grains such as maize, rice and wheat. It has 59% carbohydrates, 10.2% protein, 8.5% fiber and 2.2% lipids.(5) It has a large amount of essential amino acids and higher levels of iron and calcium than potatoes.(8) Maca contains important amounts of fatty acids including linolenic, palmitic and oleic acids. It is rich in sterols and has a high mineral content as well.(5) In addition to its rich supply of essential nutrients, Maca contains alkaloids, tannins and saponins.(3, 8) A chemical analysis conducted in 1981 showed the presence of biologically active aromatic isothiocyanates, especially p-methoxybenzyl isothiocyanate, which have reputed aphrodisiac properties.(4) Initial analysis of Maca indicate that the effects on fertility are a result of the glucosinolates.(3, 4, 8) Alkaloids are also present, but have not yet been quantified.(8)

Maca is growing in world popularity due to its energizing effects, fertility enhancement and aphrodisiac qualities. Other traditional uses include increasing energy, stamina and endurance in athletes, promoting mental clarity, treating male impotence, and helping with menstrual irregularities and female hormonal imbalances including menopause and chronic fatigue syndrome.(1, 10) It is used as an alternative to anabolic steroids by bodybuilders due to its richness in sterols.(10) Today, dried Maca roots are ground to powder and sold in drug stores in capsules as a medicine and food supplement to increase stamina and fertility.(4, 11) In Peruvian herbal medicine, Maca is also used as an immunostimulant, for anemia, tuberculosis, menstrual disorders, menopause symptoms, stomach cancer, sterility and other reproductive and sexual disorders as well as to enhance memory.(11)

The cultivation of Maca is increasing in the highlands of the Andes to meet the growing demand world wide for medicinal uses.(4, 12) In this severely economically depressed region, the market created for Maca will offer new and important sources of income for the Indigenous Peoples of the Andes. A new cultivar of Maca has been identified in the major growing regions of the highlands which will supply much of this new demand and it has been named *Lepidium peruvianum* Chacon sp.(12)

ETHNOBOTANY: WORLDWIDE USES

Peru Anemia, Aphrodisiac, Energy, Fertility, Impotence, Memory, Menopause, Menstrual Tonic, Tuberculosis

Footnotes:

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REFERENCED QUOTES ON MACA

by Chris Kilham

"As maca has become increasingly popular, its use has spread to medical practices. In the November, 1988 Townsend Letter for Doctors, physicians commented on the therapeutic uses of maca. Hugo Malaspina, M.D., a cardiologist practicing complementary medicine in Lima, Peru, has been using maca in his practice for ten years. He commonly recommends maca to women experiencing premenstrual discomfort or menopausal symptoms. "There are different medicinal plants that work on the ovaries by stimulating them," he says. "With maca though, we should say that it regulates the ovarian function." Dr. Malaspina further notes that "maca regulates the organs of internal secretion, such as the pituitary, the adrenal glands, and the pancreas. I have had perhaps two hundred female patients whose perimenopausal and menopausal symptoms are alleviated by taking maca." Dr. Malaspina first found out about maca through a group of sexually active older men who were taking the herb with good results. "One of this group started taking maca and found he was able to perform satisfactorily in a sexual relationship with a lady friend. Soon everyone in the group began drinking the powdered maca as a beverage and enjoying the boost that the root was giving their hormonal functions. I have several of these men as patients, and their improvement prompted me to find out more about maca and begin recommending it to my other patients." Aguilera Calderon, M.D., is the former Dean of the Faculty of Human Medicine at the National University of Federico Villarreal in Lima. He says, "Maca has a lot of easily absorbable calcium, plus magnesium and a fair amount of silica. We are finding it very useful in treating the decalcification of bones in children and adults." In his practice, Dr. Calderon uses maca for male impotence, erectile dysfunction, menopausal symptoms, and general fatigue. Chicago physician Gary F. Gordon, former President of the American College for Advancement in Medicine, is also a maca supporter. "We all hear rumors about various products like maca," he says. "But using this Peruvian root myself, I personally experienced a significant improvement in erectile tissue response. I call it nature's answer to Viagra. What I see in maca is a means of normalizing our steroid hormones like testosterone, progesterone, and estrogen. Therefore it has the facility

to forestall the hormonal changes of aging. It acts on men to restore them to a healthy functional status in which they experience a more active libido."

Blumenthal, Mark; HerbalGram No. 20 - Spring 1989 Pg 12:

"Plant Medicine's Importance Stressed by CSU Professor

Frank Stermitz, professor at Colorado State University, believes that plant medicine has become important again, and, although some plant study is a random process, many leads to potentially useful plants come from folklore. Stermitz says, "A number of pharmaceutical companies now have groups of researchers looking at the medicinal potential of various plants in endangered areas of the tropical rain forest." He concentrates on folklore plants found in Costa Rica and Peru.

The Incas have described thousands of plants," he says. "One book I read claims 30% of the plants are still actively in use in Peru. It's a poor country, there are few doctors there and people use plants for human medicine."

Among the plants Stermitz and his colleagues recently identified which showed promise as medicinal tools are **Lepidium meyenii**, a tuber from the high Peruvian Andes that the Indians recommended as a fertility aid for humans and animals; *Tecoma arequipensis*, the bark of which is used in Inca medicine, mainly for hypoglycemia and diabetes; and *Mussatia hyacinthina*, a tree of the high upper Amazon and Bolivia, whose bark is chewed alone or with coca leaves to fight fatigue. (Rocky Mountain News Sunday Magazine, Nov. 6, 1988)

Steinberg, Phillip; Phil Steinberg's Cat's Claw News; Vol. I, Issue 2; July / August 1995:

"MACA (LEPIDIUM MEYENII)

Maca is a root vegetable or tuber related to the potato family. It grows in the mountains at altitudes of 9 to 11 thousand feet, making it the highest cultivated plant in the world. Native Peruvians have used Maca as a food since before the times of the Incas for both its nutritional and medicinal properties. The herb contains significant amounts of amino acids, carbohydrates and minerals including calcium, phosphorus, zinc, magnesium, iron, vitamins B1, B2, B12, C and E and a number of steroid glycosides.

Traditionally Maca has been used to increase energy, stamina and endurance in athletes, promote mental clarity, as an aphrodisiac for both men & women, for male impotence, menstrual irregularities & female hormonal imbalances including menopause and chronic fatigue syndrome. More recently, athletes are finding Maca to be an excellent alternative to anabolic steroids. In March of this year I attended the Natural Products Expo West in Anaheim, California. At the show, I was given a sample bottle of Maca to use while I was there. I was amazed at how I was able to work long hours maintaining a high energy level throughout the show. I took approximately 1,000 mg of Maca three times a day along with my usual amount of Cat's Claw. I will be conducting additional research on the herb and report my findings in future newsletters."

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