



## Maca

Stock #1117-2 (90 capsules)

Maca is found in the Peruvian Andes, where it has enjoyed a rich history of use for centuries. During the Incan empire, maca was so highly revered for its energy- and libido-enhancing effects that it was used as currency. Today, in the markets of Peru, maca is sold for its strength-building and stamina-promoting effects, and to improve sexual function and enhance fertility. Locals also promote maca as a laxative, most likely due to its fiber content. Even drugstores in Lima sell maca capsules for stamina and for improving sexual function.<sup>1-3</sup>

According to Peruvian herbal medicine, maca is used for anemia, menstrual disorders, menopausal symptoms, mental clarity, stomach cancer and tuberculosis, as well as to enhance memory, reduce stress, improve physical strength, and increase energy, stamina and endurance. Maca is also regarded as an immunostimulant and is used to promote general immunity. Modern uses for maca are much the same. Today, maca is recommended as an aphrodisiac to enhance fertility and correct impotence and erectile dysfunction; as a substitute for anabolic steroids used by athletes and bodybuilders, due to its rich source of

sterols; and, as a safe and natural alternative to hormone replacement therapy.<sup>1,2,4-6</sup>

Maca has been given the nickname "Peruvian ginseng," although it bears no relation to ginseng. As a food source, as well as an herbal medicine, maca provides a rich supply of vitamins and minerals, including vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>12</sub>, C, E, calcium, iodine, iron, magnesium, phosphorus, potassium and zinc. Dried maca also contains just above 10% protein and 59% carbohydrates.<sup>1,4</sup>

World-wide interest in maca is growing, particularly in Europe, Japan and the United States, due to the plant's aphrodisiac properties and energizing and fertility-enhancing effects. As researchers and physicians investigate both the phytochemistry and biological activity of the plant, historical claims made for maca have initially been supported. For example, in one study, rodents fed maca extract exhibited significantly increased energy and stamina, and demonstrated a dramatic increase in sexual activity, compared to those not fed maca. In addition, not only did healthy animals respond well to maca extract, but rodents with low testosterone also exhibited a significant increase in sexual activity. Such results suggest a possibility that men with low testosterone or erectile dysfunction may experience improvement with maca use.<sup>1,3,7,8</sup>

To date, few human studies have been conducted. However, a 4-month study involving 9 adult "normal" men, aged 22-44 years, found that oral treatment with maca significantly increased semen volume, total sperm count per ejaculum, motile sperm count, and sperm motility. Interestingly, serum hormone levels were not modified with maca treatment, and the increase in sperm count was not related to the dosage levels of maca used. Furthermore, sperm count was increased by maca without affecting the FSH (follicle stimulating hormone) level, thus leading researchers to postulate that maca may achieve such results by improving the response of Sertoli cells to FSH.<sup>9</sup>

*Follicle stimulating hormone* (FSH) stimulates the growth and maturity of graafian follicles (which each contain an ovum or "egg") in the ovary, and stimulates spermatogenesis (the development of mature spermatozoa or "sperm") in the male.<sup>10</sup>

*Sertoli cells* are elongated cells in the tubules of the testes to which the spermatids (undeveloped sperm) become attached; they provide support, protection, and, apparently, nutrition until the spermatids are transformed into mature spermatozoa.<sup>10</sup>

To support the theory that maca may enhance response to FSH, researchers noted an unpublished study in which they demonstrated in women that oral administration of maca for 2 weeks resulted in an increase in the size of the dominant follicles.<sup>9</sup>

Although maca contains no hormones, researchers have theorized that the plant's alkaloids may be responsible for balancing the hypothalamus and pituitary glands and supporting optimal function of the adrenals, ovaries and testes. To test this theory, Dr. Gloria Chacon, PhD, isolated 4 alkaloids from maca root and carried out animal studies using both male and female rats that were given either powdered maca root or alkaloids isolated from maca root. Compared to the control groups, the rats receiving either root powder or alkaloids showed multiple egg follicle maturation in females and, in males, significantly higher sperm production and motility rates. Thus, Dr. Chacon's research confirmed that the alkaloids present in maca root are responsible for producing the documented fertility effects on the ovaries and testes of the animals studied. Through her experiments, Dr. Chacon deduced that maca alkaloids act on the hypothalamus-pituitary gland, which explains why both male and female rats are affected in a gender-appropriate

manner. In addition, this explains why the effects of maca in humans are not limited to the ovaries and testes, but also act on the adrenals—providing a sense of greater energy and vitality—and on the pancreas and thyroid as well.<sup>2,3,6</sup>

Furthermore, such research lends support to the use of maca for problems associated with menstruation and menopause and for treating chronic fatigue syndrome. Anecdotal reports from doctors using maca with their female patients cite numerous cases where perimenopausal and postmenopausal symptoms (hot flashes, depression, vaginal dryness, etc.) were alleviated and energy levels raised.<sup>5,6</sup>

Although toxicity studies on maca have shown absolutely no toxicity and no adverse pharmacologic effects, individuals for whom a pituitary stimulator such as maca is contraindicated should consult their healthcare practitioner. This would include men with a high PSA (prostate-specific antigen) level or a history of prostate cancer, and women with a history of breast cancer or other types of hormone-related cancer. In addition, men using maca on a regular basis should have periodic PSA tests performed, since levels of PSA increase due to prostate enlargement, prostatitis (inflammation of the prostate) and prostate cancer.<sup>1,6,10</sup>

#### References:

<sup>1</sup>Kilham, C. "Peru's Maca Arouses Interest." *Natural Foods Merchandiser*, February, 2000.

<sup>2</sup>Wagner R.P.H., D. "Tropical Remedies." *Nutrition Science News*; May, 2000.

<sup>3</sup>Fitzpatrick RD, A. & Frank PhD, L. "An Integrative Approach to Female Sexual Dysfunction." *International Journal of Integrative Medicine*; 2001, 3(2): 8-15.

<sup>4</sup>Taylor, L. *Herbal Secrets of the Rainforest*. Prima Publishing, 1998.

<sup>5</sup>Presser PharmD, A. *Pharmacist's Guide to Medicinal Herbs*. Petaluma, CA: Smart Publications, 2000.

<sup>6</sup>Walker DPM, M. "Effects of Peruvian Maca on Hormonal Functions." *Townsend Letter for Doctors & Patients*; November, 1998.

<sup>7</sup>Kilham, C. "Herbs Dr. Ruth Should Know." *Natural Foods Merchandiser*, November, 2001.

<sup>8</sup>Zheng, B.L., et. al. "Effect of a lipidic extract from *lepidium meyenii* on sexual behavior in mice and rats." *Urology*; 2000, 55(4):598-602.

<sup>9</sup>Gonzales, G.F., et. al. "*Lepidium meyenii*(Maca) improved semen parameters in adult men." *Asian Journal of Andrology*; 2001, 3(4):301-303.

<sup>10</sup>WebMD Health; <http://www.webmd.com>