

Life Extension Magazine June 2010

REPORT

A New Way to Manage Menopause Regain Hormonal Balance with a Cutting-edge Adaptogen

By Julius Goepp, MD

According to recent research, conventional medicine largely fails the estimated 60% of American women aged 40-65 who seek relief from menopausal symptoms each year.¹

The problem lies in an unconscionable lack of safe, effective options.

Many women will no longer submit to standard hormone replacement therapy and risk the dangers of synthetic and horse-derived hormone drugs like **Premarin®** and **Prempro®**. Doctors persist in prescribing these drugs even after the Women's Health Initiative exposed their deadly side effects in 2002 and 2004.²⁻⁴

Many aging women are challenged with the safer option of bioidentical hormone therapy thanks to FDA-induced inflated prices, medical bias, and obstructionist government practices.

Fortunately, there remains a small but significant community of scientists committed to finding natural methods for optimal menopause management.

In a little-known advance, researchers recently uncovered a novel method to control the rapid hormonal fluctuations at the heart of menopausal suffering. They have documented potent anti-menopausal effects in a novel extract of **maca** root (*Lepidium meyenii*, also known as *Lepidium peruvianum*), a clinically proven **adaptogen** native to South America.⁵

In this article, the results of their findings are detailed. Using a highly refined, standardized form of maca, up to **87% of women reported positive improvements in relief of menopausal symptoms**, including hot flashes, fatigue, night sweats, and mood swings.⁵

Additional research has documented maca's ability to improve sexual desire and fertility and reduce menopause-induced stress and weight gain, along with beneficial effects on lipid levels and bone density.⁶⁻¹¹

Here you will discover how maca operates differently than other therapeutic regimens, in part by promoting optimal function of the hypothalamic-pituitary-adrenal (HPA) axis.^{12,13} This complex set of structures originating within the brain governs the endocrine (hormone) system, exerting favorable effects not only on aging ovaries, but on the thyroid and adrenal glands as well, to support improved hormonal balance, greater energy, and vitality in women going through menopause. The result is a cutting-edge, multimodal approach that may revolutionize menopause management in the future.

A SCIENTIFICALLY VALIDATED, NATURAL ALTERNATIVE

Cultivated exclusively above 12,000 feet in the remote central highlands of the Andes, maca (*Lepidium meyenii*, also known as *L. peruvianum*) is a cruciferous plant whose fleshy bulb has been used since the pre-Columbian era as a fertility enhancer and aphrodisiac for both sexes.¹⁴⁻¹⁶ It is prized in traditional Peruvian medicine as an adaptogen with particular utility in easing the physical and emotional stresses of menopause.^{14,17} Modern-day scientific methods, as applied first in high-tech laboratories in Peru and now around the world, have revealed compelling biochemical features of the maca bulb that bear out its traditional therapeutic applications.



Containing over 53 distinct components, maca extracts have been found to have a multiplicity of biological activities in non-animal lab tests, including antimicrobial and pesticidal effects.¹⁸ Maca extracts also have mild antioxidant capabilities, and offer some protection against chemically induced liver cell damage.^{19,20}

However, the most exciting discovery surrounding maca extracts arises from extensive literature documenting its favorable effects on sexual function and response—and the growing body of scientific evidence on its effects during menopause.

In animal studies, maca is capable of reducing and in some cases entirely neutralizing variations in body chemistry induced by stress. In animal models, it eradicates stress-induced ulcers while preventing the adrenal gland enlargement that results from chronic stress.¹⁴ Acting across multiple biochemical pathways, maca also eliminates stress-induced decreases in free fatty acids in the blood and mitigates visible stress responses in animal studies.¹⁴



MACA: A NEW WAY TO MANAGE MENOPAUSE

- An estimated 60% of American women aged 40-65 seek relief from menopausal symptoms each year—many of whom are largely failed by mainstream medicine.
- Standard hormone replacement therapy, still touted as effective by many physicians, increases the risk of cardiovascular disease and breast cancer. Bioidentical hormone therapy remains largely unavailable and unaffordable to most women.
- Scientists seeking safe, natural alternatives to existing therapies have focused on **adaptogens**, plant-derived compounds that safely induce favorable alterations in energy, neutralize stress, and promote optimal health by increasing metabolism, stamina, sex drive, and healing ability—with few side effects.
- An adaptogen known as **maca** has been shown to provide multimodal relief from menopausal symptoms, including hot flashes, fatigue, night sweats, and mood swings.
- Maca operates differently than other natural interventions for menopause, promoting optimal function of the *hypothalamic-pituitary-adrenal* (HPA) axis that governs hormone levels in the body.
- Compelling data from animal and human studies demonstrate maca's unique, multitargeted ability to balance shifting hormone levels during menopause.
- Maca induces favorable effects on blood lipid profiles and bone density markers, two parameters that decline drastically during menopause.
- Maca also helps to reduce the depression and anxiety that accompany menopause, and exerts beneficial effects on sexual desire and function.



In a remarkable study of healthy adult mice and rats, maca extract administered for 22 days led to a remarkable fourfold-plus increase in the number of episodes of successful sexual intercourse compared to controls.¹⁰ The number of females testing positive for the presence of sperm following intercourse also more than doubled. In male animals with erectile dysfunction, maca extract dramatically reduced the amount of time it took for them to achieve an erection after stimulation. The authors of the study concluded that maca had successfully enhanced sexual function and confirmed its aphrodisiac properties.¹⁰

Maca also enhances *fertility* of female animals during their reproductive periods, as indicated by an increase in litter size in supplemented animals.¹⁵ Maca also induces *estrogenic* effects in animals whose ovaries have been removed to simulate menopause, including an increase in the weight and size of the uterus.¹⁵

Many of maca's dramatic effects on sexual function and sex hormones are augmented by impressive balancing and stabilizing effects on steroid hormones associated with stress, including the stress hormone cortisol and its endocrinological trigger, *adrenocorticotropic* hormone (ACTH), secreted by the *adrenal* gland.



A prolific team of Australian and Polish researchers have made great strides in mapping out maca's complicated interactions with the ovarian, adrenal, and hypothalamic feedback response systems that regulate sexual function—and whose activities are adversely affected by menopause. In animal studies, this group has shown that maca in very high quantities is completely safe, while in more moderate doses it exerts profound adaptogenic effects by decreasing cortisol and ACTH levels significantly.^{12,13} In an animal model of menopause using a novel and proprietary maca extract, the team also found that maca possesses distinct antidepressant and sedative effects—without inducing any changes in cognitive function.¹³

Other researchers have replicated these compelling findings in animal models of menopause, demonstrating maca exhibits antidepressant activity, while specific forms of the plant have beneficial effects on learning as well.¹⁶ In a particularly impressive study, Peruvian scientists revealed that maca significantly ameliorated chemically-induced memory impairment in large part by blocking the enzyme *acetylcholinesterase* (AChE)—the same mechanism of action mobilized by prescription drugs for Alzheimer's disease.^{21,22} In a related study, the same researchers

demonstrated that maca significantly improved memory function in mice whose ovaries had been removed to mimic the hormonal effects of menopause, which often include memory impairment.²³

Maca's powerfully beneficial effect on menopausal changes may extend to other tissues as well. Most notably, in a pre-clinical model, maca mitigated weight gain and increased estrogen levels following onset of menopause, while preventing detrimental increases in blood lipid abnormalities.²⁴ Blood markers of bone loss were also restored to levels found in pre-menopausal animals, suggesting that maca may also be effective in preventing post-menopausal osteoporosis. These results received further validation in a study indicating a favorable effect on bone mineral density and composition in a rat model of postmenopausal osteoporosis.¹⁷ Evidence is also emerging that compounds contained in maca prevent ultraviolet light-induced skin damage in rat studies—a key finding since post-menopausal women experience skin changes (including elevated cancer risk) resulting from ultraviolet exposure.²⁵

CLINICAL STUDIES CONFIRM BENEFITS FOR WOMEN

An international team based at Charles Sturt University in Australia has added substantially to these findings through extensive research in humans using an organic, standardized maca extract. Their first study, a pilot, placebo-controlled test among early postmenopausal women, showed encouraging results: there were significant changes in the “background” hormones that influence sex hormone secretion, resulting in increased estrogen and progesterone levels after 8 months of supplementation.²⁶ These hormonal shifts were accompanied by substantially reduced feelings of discomfort associated with menopause.

These findings led to a randomized, placebo-controlled, multicenter trial completed by 124 early postmenopausal women aged 49 and up.¹¹ In this study, women had to meet not only symptomatic but also biochemical criteria for enrollment: they had to exhibit low estrogen levels in addition to elevated levels of follicle-stimulating hormone (FSH). The rationale behind these criteria is simple: low estrogen and elevated FSH levels establish that ovarian function has indeed fallen below levels typical of the reproductive years, and defines the early postmenopausal period. Women ingested a total of **2,000 mg** of maca daily or a placebo, for up to 4 months, and biochemical profiles as well as a standardized index of menopausal symptoms were followed.

The results were extraordinary. The maca extract stimulated production of estradiol while simultaneously suppressing FSH levels—a nearly unprecedented induction of hormonal balance.¹¹ There was also a significant increase in beneficial high-density lipoprotein (HDL) in supplemented women—but not in controls. Most importantly from the women's own experiences, maca significantly reduced both the frequency and severity of individual menopausal symptoms, particularly hot flashes and night sweats.

These findings contributed to a significant decrease in the overall Kupperman Index, a standardized measure of menopausal symptom severity. The authors of the study found in maca *“an attractive non-hormonal addition to the choices available to early-postmenopausal women in the form of a natural plant alternative to Hormone Replacement Therapy (HRT)—hence, reducing dependence on hormone therapy programs.”*¹¹

The same team added to this body of evidence through a separate, randomized controlled trial, this time studying two symptom scales for increased resolution and examining a much larger array of biochemical parameters that typically deteriorate in the post-menopausal period.²⁷ Once again, they recorded a dramatic decrease in standardized symptom scores over the course of the study, with similarly impressive, favorable alterations in FSH and estradiol levels.

In addition, they documented a remarkable suppression of cortisol and ACTH, the hormones associated with stress, and an



increase in serum iron concentrations. Bone density markers were also noticeably increased.²⁷

Other researchers have replicated and extended these findings. There's now solid evidence for maca's benefits on psychological symptoms and measures of sexual dysfunction in postmenopausal women.²⁸ Interestingly, the team conducting this study also observed reductions in anxiety and depression, along with improved sexual function unrelated to changes in sex hormone levels, indicating a broader spectrum of multimodal benefit. Researchers at the Massachusetts General Hospital further revealed that maca extracts can alleviate sexual dysfunction in women taking selective serotonin reuptake inhibitor (SSRI) antidepressant medications, while increasing libido.²⁹

SUMMARY

An estimated 60% of American women aged 40-65 seek relief from menopausal symptoms each year, and many of them fail to achieve adequate relief from the offerings of mainstream medicine. Standard hormone replacement therapy, still touted as effective by many physicians, increases the risk of cardiovascular disease and breast cancer. Bioidentical hormone therapy is not readily available and affordable for many women. Scientists seeking safe, natural alternatives to existing therapies have focused on **adaptogens**, plant-derived compounds that safely induce favorable alterations in energy, neutralize stress, and promote optimal health by increasing metabolism, stamina, sex drive, and healing ability with few side effects. An adaptogen known as **maca** has been shown to provide multimodal relief from menopausal symptoms, including hot flashes, fatigue, night sweats, and mood swings. Maca operates differently than other natural interventions for menopause, promoting optimal function of the hypothalamic-pituitary-adrenal axis that governs hormone levels in the body. Compelling data from animal and human studies demonstrate maca's unique, multitargeted effects at balancing shifting hormone levels during menopause. Maca induces favorable effects on blood lipid profiles and bone density markers, two parameters that decline drastically during menopause. Maca also helps to reduce the depression and anxiety that accompany menopause, and has beneficial effects on sexual desire and function.

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.

References

1. Williams RE, Kalilani L, DiBenedetti DB, Zhou X, Fehnel SE, Clark RV. Healthcare seeking and treatment for menopausal symptoms in the United States. *Maturitas*. 2007 Dec 20;58(4):348-58.
2. Rossouw JE, Anderson GL, Prentice RL, et al. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results From the Women's Health Initiative randomized controlled trial. *JAMA*. 2002 Jul 17;288(3):321-33.
3. Anderson GL, Limacher M, Assaf AR, et al. Effects of conjugated equine estrogen in postmenopausal women with hysterectomy: the Women's Health Initiative randomized controlled trial. *JAMA*. 2004 Apr 14;291(14):1701-12.
4. Chlebowski RT, Kuller LH, Prentice RL, et al. Breast cancer after use of estrogen plus progestin in postmenopausal women. *N Engl J Med*. 2009 Feb 5;360(6):573-87.
5. Therapeutic Effects of Pre-Gelatinized Maca (*Lepidium peruvianum* Chacon) used as a non-hormonal alternative to HRT in perimenopausal women-Clinical Pilot Study. *Int J Biomed Sci*. 2006 Jun;2(2):143-59.
6. Balick MJ, Lee R. Maca: from traditional food crop to energy and libido stimulant. *Altern Ther Health Med*. 2002 Mar-Apr;8(2):96-8.
7. Gonzales GF, Córdova A, Vega K, Chung A, Villena A, Góñez C, Castillo S. Effect of *Lepidium meyenii* (MACA) on sexual desire and its absent relationship with serum testosterone levels in adult healthy men. *Andrologia*. 2002 Dec;34(6):367-72.
8. Comhaire FH, Mahmoud A. The role of food supplements in the treatment of the infertile man. *Reprod Biomed Online*. 2003 Oct-Nov;7(4):385-91.
9. Wang Z, Yang J, Wang G, Bian L. Influence of *Lepidium meyenii* walp on lipid and bone mass in ovariectomized rats. *Wei Sheng Yan Jiu*. 2009 Jul;38(4):420-2, 425.
10. Zheng BL, He K, Kim CH, et al. Effect of a lipidic extract from *lepidium meyenii* on sexual behavior in mice and rats. *Urology*. 2000 Apr;55(4):598-602.

11. Meissner HO, Mscisz A, Reich-Bilinska H, et al. Hormone-balancing effect of pre-gelatinized organic Maca (*Lepidium peruvianum Chacon*): (II) physiological and symptomatic responses of early-postmenopausal women to standardized doses of Maca in double blind, randomized, placebo-controlled, multi-centre clinical study. *Int J Biomed Sci.* 2006 Dec 15;2(4):360-74.
12. Meissner HO, Kedzia B, Mrozikiewicz P, Mscisz A. Short and long-term physiological responses of male and female rats to two dietary levels of pre-gelatinized Maca (*Lepidium Peruvianum Chacon*). *Int J Biomed Sci.* 2006 Feb 15;2(1):15-29.
13. Meissner HO, Mrozikiewicz P, Bobkiewicz-Kozłowska T, et al. Hormone-balancing effect of pre-gelatinized organic Maca (*Lepidium peruvianum Chacon*): (I) biochemical and pharmacodynamic study on Maca using clinical laboratory model on ovariectomized rats. *Int J Biomed Sci.* 2006 Sept 15;2(3):260-84.
14. Lopez-Fando A, Gomez-Serranillos MP, Iglesias I, Lock O, Upamayta UP, Carretero ME. *Lepidium peruvianum chacon* restores homeostasis impaired by restraint stress. *Phytother Res.* 2004 Jun;18(6):471-4.
15. Ruiz-Luna AC, Salazar S, Aspajo NJ, Rubio J, Gasco M, Gonzales GF. *Lepidium meyenii* (Maca) increases litter size in normal adult female mice. *Reprod Biol Endocrinol.* 2005 May 3;3:16.
16. Rubio J, Caldas M, Davila S, Gasco M, Gonzales GF. Effect of three different cultivars of *Lepidium meyenii* (Maca) on learning and depression in ovariectomized mice. *BMC Complement Altern Med.* 2006 Jun 23;6:23.
17. Zhang Y, Yu L, Ao M, Jin W. Effect of ethanol extract of *Lepidium meyenii* Walp. on osteoporosis in ovariectomized rat. *J Ethnopharmacol.* 2006 Apr 21;105(1-2):274-9.
18. Tellez MR, Khan IA, Kobaisy M, Schrader KK, Dayan FE, Osbrink W. Composition of the essential oil of *Lepidium meyenii* (Walp). *Phytochemistry.* 2002 Sep;61(2):149-55.
19. Valentova K, Buckiova D, Kren V, Peknicova J, Ulrichova J, Simanek V. The in vitro biological activity of *Lepidium meyenii* extracts. *Cell Biol Toxicol.* 2006 Mar;22(2):91-9.
20. Vecera R, Orolin J, Skottova N, et al. The influence of maca (*Lepidium meyenii*) on antioxidant status, lipid and glucose metabolism in rat. *Plant Foods Hum Nutr.* 2007 Jun;62(2):59-63.
21. Rubio J, Dang H, Gong M, Liu X, Chen SL, Gonzales GF. Aqueous and hydroalcoholic extracts of Black Maca (*Lepidium meyenii*) improve scopolamine-induced memory impairment in mice. *Food Chem Toxicol.* 2007 Oct;45(10):1882-90.
22. Lockhart IA, Mitchell SA, Kelly S. Safety and tolerability of donepezil, rivastigmine and galantamine for patients with Alzheimer's disease: systematic review of the 'real-world' evidence. *Dement Geriatr Cogn Disord.* 2009;28(5):389-403.
23. Rubio J, Qiong W, Liu X, et al. Aqueous extract of black Maca (*Lepidium meyenii*) on memory impairment induced by ovariectomy in mice. *Evid Based Complement Alternat Med.* 2008 Oct 9.
24. Wang Z, Yang J, Wang G, Bian L. Influence of *Lepidium meyenii* walp on lipid and bone mass in ovariectomized rats. *Wei Sheng Yan Jiu.* 2009 Jul;38(4):420-2, 25.
25. Gonzales-Castaneda C, Gonzales GF. Hypocotyls of *Lepidium meyenii* (maca), a plant of the Peruvian highlands, prevent ultraviolet A-, B-, and C-induced skin damage in rats. *Photodermatol Photoimmunol Photomed.* 2008 Feb;24(1):24-31.
26. Meissner HO, Kapczynski W, Mscisz A, Lutomski J. Use of gelatinized Maca (*Lepidium peruvianum*) in early postmenopausal women – a pilot study. *Int J Biomed Sci.* 2005 Jun 15;1(1):33-45.
27. Meissner HO, Mscisz A, Reich-Bilinska H, et al. Hormone-balancing effect of pre-gelatinized organic Maca (*Lepidium peruvianum Chacon*): (III) clinical responses of early-postmenopausal women to Maca in double blind, randomized, placebo-controlled, crossover configuration, outpatient study. *Int J Biomed Sci.* 2006 Dec 15;2(4):375-94.
28. Brooks NA, Wilcox G, Walker KZ, Ashton JF, Cox MB, Stojanovska L. Beneficial effects of *Lepidium meyenii* (Maca) on psychological symptoms and measures of sexual dysfunction in postmenopausal women are not related to estrogen or androgen content. *Menopause.* 2008 Nov-Dec;15(6):1157-62.
29. Dording CM, Fisher L, Papakostas G, et al. A double-blind, randomized, pilot dose-finding study of maca root (*L. meyenii*) for the management of SSRI-induced sexual dysfunction. *CNS Neurosci Ther.* 2008 Fall;14(3):182-91.

These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease. The information provided on this site is for informational purposes only and is not intended as a substitute for advice from your physician or other health care professional or any information contained on or in any product label or packaging. You should not use the information on this site for diagnosis or treatment of any health problem or for prescription of any medication or other treatment. You should consult with a healthcare professional before starting any diet, exercise or supplementation program, before taking any medication, or if you have or suspect you might have a health problem. You should not stop taking any medication without first consulting your physician.

Copyright of Life Extension is the property of Life Extension Foundation and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.