Lepidium meyenii (Maca) improved semen parameters in adult men

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Abstract

Aim: The present study was designed to determine the effect of a 4 month oral treatment with tablets of Lepidium meyenii (Maca) on seminal analysis in nine adult normal men aged 24-44 years old. Methods: Nine men received tablets of Maca (1500 or 3000 mg/day) for 4 months. Seminal analysis was performed according to guidelines of the World Health Organization (WHO). Serum luteinizing hormone (LH), follicle stimulating hormone (FSH), prolactin (PRL), testosterone (T) and estradiol (E2) were measured before and after treatment. Results: Treatment with Maca resulted in increased seminal volume, sperm count per ejaculum, motile sperm count, and sperm motility. Serum hormone levels were not modified with Maca treatment. Increase of sperm count was not related to dose of Maca. Conclusion: Maca improved sperm production and sperm motility by mechanisms not related to LH, FSH, PRL, T and E2.

1 Introduction

Maca is the root of a Peruvian plant Lepidium meyenii (Brassicaceae), growing in the Central Andean Region of Peru between 4000 and 4500 m altitude, mainly in Junin and Cercos de Pasco. This species is described in the catalogue of the flowering plants and gymnosperms of Peru. Maca is traditionally employed, among others, to improve sexuality and fertility. Oral administration of Maca significantly improved the sexual behavior in male rats and mice. More recently, it has been demonstrated that Maca improves spermatogenesis in male rats, however, its effect on sperm production in men has not been assessed. The present investigation was designed to study the effect of oral administration of Maca on the semen parameters and serum luteinizing hormone (LH), follicle stimulating hormone (FSH), prolactin (PRL), testosterone (T) and estradiol (E2) levels in normal male volunteers.

2 Materials and methods

2.1 Maca

Maca (Maca Götalinizada de La Molina) tablets were provided by the Laboratorios Hernal (Lima, Peru). Each tablet contains 500 mg of the root. This product could be purchased in the pharmacy as a nutrient.

2.2 Subjects and treatment

Twelve healthy men, 24-44 years of age, were recruited in the laboratory. Each man was married and single. Semen samples were collected by masturbation after a 3 day abstinence and fasting blood samples were obtained between 08.00-09.00 h before and at the end of the treatment. They were kept frozen until hormone assay. Six subjects received 1500 mg/day, whereas 3, 3000 mg/day for 4 months. The study was approved by the Institutional Review Board of the Scientific Research Office at the Universidad Peruana Cayetano Heredia.

2.3 Semen analysis

Sperm analysis

The ejaculate volume, semen consistency, sperm motility, sperm morphology and sperm concentration were assessed according to the WHO manual. Spermatozoa were graded a (rapid progressive motility), b (slow or sluggish progressive motility), c (nonprogressive motility), or d (immotility) as recommended by the manual.

2.4 Hormone assay

LH, FSH, and PRL were measured by immunoradiometric assay (IRMA), whereas T and E2 were measured by radioimmunoassay using commercial kits (Diagnostic Products, California).

2.5 Statistical analysis

Data were expressed in mean±SEM, if applicable. Statistical analysis was performed by the Students t-test. The difference was considered significant when P<0.05.

3 Results

Data on semen analysis are presented in Table 1. The semen volume, total sperm count, motile sperm count, and sperm morphology Grades a+b were significantly increased after treatment with Maca (P<0.05). Motility Grade a sperm was also increased, but statistically insignificant. There were no significant differences between the two dosage levels of Maca used. In 4 of the 9 subjects, who had low basal serum FSH levels, the sperm count was not increased after Maca treatment. Maca treatment did not significantly change the levels of the hormones assayed (Table 2).

4 Discussion

Climacteric volume resulted from the contributions of seminal vesicles (60%), prostate (30%) and epididymis (10%). All these glands are androgen dependent. Spermatozoa were graded a (rapid progressive motility), b (slow or sluggish progressive motility), c (nonprogressive motility), or d (immotility) as recommended by the manual.

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4 Discussion

Semen volume resulted from the contributions of seminal vesicles (80%), prostate (30%) and epididymis (10%). All these glands are androgen dependent. Spermatozoa were graded a (rapid progressive motility), b (slow or sluggish progressive motility), c (nonprogressive motility), or d (immotility) as recommended by the manual.

Another possibility is that Maca may act without the participation of androgen mechanism. This seems to be supported by the fact that the weight of seminal vesicle, a target for androgen action, was not influenced by Maca in adult male rats.

In adult male rats, Maca has been shown to be beneficial to spermatogenesis (WHO laboratory manual for the examination of human semen). This species is described in the catalogue of the flowering plants and gymnosperms of Peru. Maca is traditionally employed, among others, to improve sexuality and fertility. Oral administration of Maca significantly improved the sexual behavior in male rats and mice. More recently, it has been demonstrated that Maca improves spermatogenesis in male rats, however, its effect on sperm production in men has not been assessed. The present investigation was designed to study the effect of oral administration of Maca on the semen parameters and serum luteinizing hormone (LH), follicle stimulating hormone (FSH), prolactin (PRL), testosterone (T) and estradiol (E2) levels in normal male volunteers.

References


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