Progesterone is one of the many hormones produced by a woman’s body. Progesterone is produced by the ovaries and helps to regulate the menstrual cycle and is necessary to sustain a pregnancy.

Progesterone is produced naturally in the body. There are also several synthetic forms of progesterone, called progestins, which are manufactured and are not found naturally in the human body. Progestins are the type of progesterone found in most commercially available products used for hormone replacement therapy (HRT) and contraception.

How is progesterone different from the progestins?
Unlike progesterone, progestins are commercially prepared contain chemicals that are not identical to those made naturally by the human body. Because of this, progestins may cause different side effects than progesterone.

Progestin
Synthetic progestins increase LDL (bad) cholesterol and decrease HDL (good) cholesterol and can lead to an increased risk of developing atherosclerosis.

Other side effects of synthetic progestins include abdominal bloating, breast discomfort, headache, depression, weight gain, and acne.

Case Report: Hydroxyprogesterone Caproate Injection for Prevention of Preterm Labor

A 32-year-old woman presented at 24 weeks’ gestation in preterm labor and was admitted to a local hospital for observation. Further examination by her obstetrician revealed that her cervix had shortened and she was experiencing contractions. The patient, a registered nurse, was in good overall health, though the pregnancy was considered high risk because of her obstetric history.

The patient’s history included a pregnancy at age 20, which ended in a loss of the fetus at 28 weeks’ gestation. A second pregnancy at age 23 ended in a loss of the fetus at 38 weeks’ gestation. Both of these fetuses had multiple birth defects. A third pregnancy at age 27 ended in the premature delivery of a daughter at 28 weeks’ gestation. The baby did well, despite a birth weight of 2 pounds 11 ounces, and came home after spending several weeks in the neonatal intensive care unit. A fourth pregnancy at age 30 ended in the delivery of another healthy daughter at 35 weeks, but the...
Progestosterone

Progestosterone is better at preventing menopausal changes in cholesterol, including LDL and HDL.

Progestosterone causes less liver dysfunction, breast tenderness, and fluid retention, and a lower incidence of headache than progestins.

The only significant side effect associated with progestrone is drowsiness.

Recent clinical trials suggest that progestins may also have a detrimental effect on overall health, including increased incidence of cardiovascular disease and dementia. While progestrone has not been included in many of these studies, studies that do involve progestrone indicate that progestrone may not have the same detrimental effects as progestins.

HOW DO CLINICAL TRIALS OF HRT APPLY TO PROGESTERONE?

Most clinical trials study progestins, hormones available in commercial products that are not always the same hormones that are produced naturally by a woman’s body.

The Postmenopausal Estrogen/Progestin Interventions (PEPI) trial, published in 1995, studied women taking estrogen alone, estrogen plus progestrone, or estrogen plus a progestin. In this trial, researchers determined that women taking estrogen alone had an improved cholesterol profile compared to when they began the estrogen. Women taking estrogen and progesterone did not experience a significantly different effect on cholesterol than the women taking estrogen alone. Women taking estrogen and a progestin, however, did not have as much of an improved effect on cholesterol, suggesting that progestins may have an adverse effect on cardiovascular outcomes.

WHAT ARE THE AVAILABLE DOSAGE FORMS OF PROGESTERONE?

Sublingual troches (lozenges that melt in the mouth) — Oral capsules, tablets, and suspension

TOPICAL CREAM OR GEL

WHAT CAN COMPOUNDING PHARMACISTS PROVIDE PER PHYSICIAN PRESCRIPTION?

Natural progestrone is used by compounding pharmacists to formulate various dosage forms of bioidentical hormone replacement therapy (BHRT). It offers a safer, more natural alternative to synthetic progestins used in HRT.

Only one commercial preparation (Prometrium) contains natural progesterone; it is available only as capsules in only two doses and contains peanut oil. Women who require different dosage forms or strengths or have an allergy to peanut oil can benefit from the flexibility and expertise of working with a physician and compounding pharmacist to prepare an individualized formulation. For example, women who cannot tolerate oral progesterone may benefit from topical administration or a vaginal suppository.

CASE REPORT

The Patient continued her medication until preterm labor recurred at 27 weeks’ gestation, at which point she was readmitted to the hospital. She was given magnesium sulfate during her stay to stop her contractions, and was monitored for 2 nights prior to being discharged. Procardia (Nifedipine) 5 mg every 6 hours was added to her regimen of terbutaline and hydroxyprogesterone caproate. Strict bed rest was continued.

At 30 weeks of pregnancy, Procardia (Nifedipine) was discontinued. The patient was monitored by her physician via ultrasound every 4 weeks and given a nonstress test twice weekly. The patient continued her regimen of weekly hydroxyprogesterone caproate injections and terbutaline 5 mg as needed. Her cervix had not shortened any further as of her last examination before going into labor. At 36 weeks of pregnancy, all medications were discontinued. The patient delivered at 36.5 weeks’ gestation with an apparently healthy 6-pound baby boy.

Suggested Reading and Resources


FROM THE LITERATURE


ABSTRACT

17α-hydroxyprogesterone caproate is a naturally occurring metabolite of progesterone that is produced in significant quantities during pregnancy. The demand for 17α-hydroxyprogesterone caproate, the lack of a commercially available manufactured form approved by the U.S. Food and Drug Administration, and publication of the results of a large trial to determine the effectivity of the drug in the prevention of preterm delivery have spawned an increased interest in compounded formulations of the drug. The demand also has necessitated a review of the available literature and of past clinical studies, and a look at present and planned studies. Owing to the importance of this drug in pregnancy and the need for safety, accuracy, potency, and sterility in an intramuscular injection (the most common route of administration), compounding pharmacies must be in compliance with the United States Pharmacopeia Chapter <907> standards should they wish to compound this formulation.