# Progesterone Summaries

From the original article in 2007. Author: Ray Peat.

## Progesterone Information

Sixty years ago, progesterone was found to be the main hormone produced by the ovaries. Since it was necessary for fertility and for maintaining a healthy pregnancy, it was called the "pro-gestational hormone," and its name sometimes leads people to think that it isn't needed when you don't want to get pregnant. In fact, it is the most protective hormone the body produces, and the large amounts that are produced during pregnancy result from the developing baby's need for protection from the stressful environment. Normally, the brain contains a very high concentration of progesterone, reflecting its protective function for that most important organ. The thymus gland, the key organ of our immune system, is also profoundly dependent of progesterone.

In experiments, progesterone was found to be the basic hormone of adaptation and of resistance to stress. The adrenal glands use it to produce their antistress hormones, and when there is enough progesterone, they don't have to produce the potentially harmful cortisol. In a progesterone deficiency, we produce too much cortisol, and excessive cortisol causes osteoporosis, aging of the skin, damage to brain cells, and the accumulation of fat, especially on the back and abdomen.

Experiments have shown that progesterone relieves anxiety, improves memory, protects brain cells, and even prevents epileptic seizures. It promotes respiration, and has been used to correct emphysema. In the circulatory system, it prevents bulging veins by increasing the tone of blood vessels, and improves the efficiency of the heart. It reverses many of the signs of aging in the skin, and promotes healthy bone growth. It can relieve many types of arthritis, and helps a variety of immunological problems.

If progesterone is taken dissolved in vitamin E, it is absorbed very efficiently, and distributed quickly to all of the tissues. If a woman has ovaries, progesterone helps them to regulate themselves and their hormone production. It helps to restore normal functioning of the thyroid and other glands. If her ovaries have been removed, progesterone should be taken consistently to replace the lost supply. A progesterone deficiency has often been associated with increased susceptibility to cancer, and progesterone has been used to treat some types of cancer.

It is important to emphasize that progesterone is not just the hormone of pregnancy. To use it only "to protect the uterus" would be like telling a man he doesn't need testosterone if he doesn't plan to father children, except that progesterone is of far greater and more basic physiological significance than testosterone. While men do naturally produce progesterone, and can sometimes benefit from using it, it is not a male hormone. Some people get that impression, because some physicians recommend combining estrogen with either testosterone or progesterone, to protect against some of estrogen's side effects, but progesterone is the body's natural complement to estrogen. Used alone, progesterone often makes it unnecessary to use estrogen for hot flashes or insomnia, or other symptoms of menopause.

When dissolved in vitamin E, progesterone begins entering the blood stream almost as soon as it contacts any membrane, such as the lips, tongue, gums, or palate, but when it is swallowed, it continues to be absorbed as part of the digestive process. When taken with food, its absorption occurs at the same rate as the digestion and absorption of the food.

## Progesterone Supplementation

SYMPTOMATIC: For tendonitis, bursitis, arthritis, sunburn, etc., progesterone in vitamin E can be applied locally after a little olive oil has been put on the skin to make it easier to spread the progesterone solution. For migraines, it has been taken orally just as the symptoms begin.

FOR PMS: The normal pattern of progesterone secretion during the month is for the ovaries to produce a large amount in the $2^{nd}$ two weeks of the menstrual cycle, (i.e., day 14 through day 28) beginning at ovulation and ending around the beginning of menstruation, and then to produce little for the following two weeks. An average person produces about 30 milligrams daily during the $2^{nd}$ two weeks. The solution I have used contains approximately 3 or 4 milligrams of progesterone per small drop. Three to four drops, or about 10 to 15 milligrams of progesterone, is often enough to bring the progesterone level up to normal. That amount can be taken days 14 through 28 of the menstrual cycle; this amount may be repeated once or twice during the day as needed to alleviate symptoms. Since an essential mechanism of progesterone's action involves its opposition to estrogen, smaller amounts are effective when estrogen production is low, and if estrogen is extremely high, even large supplements of progesterone will have no clear effect; in that case, it is essential to regulate estrogen metabolism, by improving the diet, correcting a thyroid deficiency, etc. (Unsaturated fat is antithyroid and synergizes with estrogen.)

PERIMENOPAUSAL: The symptoms and body changes leading up to menopause are associated with decreasing production of progesterone, at a time when estrogen may be at a lifetime high. The cyclic use of progesterone, two weeks on, two weeks off, will often keep the normal menstrual cycle going. Three to our drops, providing ten or twelve milligrams of progesterone, is typical for a day, but some women prefer to repeat that amount. Progesterone is always more effective when the diet contains adequate protein, and when thee isn't an excessive amount of unsaturated fat in the diet..

POSTMENOPAUSAL: Some women continue the cyclic use of progesterone ater menopause, because the pituitary gland and brain may continue to cycle long after menstruation has stopped, and progesterone is an important regulator of pituitary and brain function. The cycling pituitary affects the adrenal glands and other organs, and progesterone tends to protect against

the unopposed actions of prolactin, cortisol, and adrenal androgenic hormones. Progesterone's effects on the pituitary apparently contribute to its protective effect against osteoporosis, hypertension, hirsutism, etc. But some women prefer to use progesterone without interruption after the menopause, for its protective antistress effects. Slender people usually find that two or three drops are enough, but this amount may be repeated once or twice as needed to relieve symptoms. Adequate protein in the diet and good thyroid function help the body to produce its own progesterone; even if the ovaries have been removed, the adrenal glands and brain continue to produce progesterone.

## Dosage of Progesterone

Since progesterone has none of the harmful side effects of other hormones (except for alteration of the menstrual cycle if it is taken at the wrong time of month), the basic procedure should be to use it in sufficient quantity to make the symptoms disappear, and to time its use so that menstrual cycles are not disrupted. This normally means using it only between ovulation and menstruation unless symptoms are sufficiently serious that a missed period is not important. The basic idea of giving enough to stop the symptoms can be refined by some information on a few of the factors that condition the need for progesterone.

If a person has an enlarged thyroid gland, progesterone promotes secretion and unloading of the stored “colloid,” and can bring on a temporary hyperthyroid state. This is a corrective process, and in itself isn't harmful. A thyroid supplement should be used to shrink the goiter before progesterone is given. Normal amounts of progesterone facilitate thyroid secretion, while a deficiency, with unopposed estrogen, causes the thyroid to enlarge. The production of euphoria has been mentioned as a side effect, but I think euphoria is simply an indication of a good physiological state. (The history of official medical attitudes toward euphoria is a subject that deserves more attention.) Very large doses that are given in vitamin E solution, allowing complete absorption, can reach the level that is sometimes achieved late in pregnancy, producing both euphoria and a degree of anesthesis. To avoid unexpected anesthesia, the correct dose should be determined by taking about 10 mg. at a time allowing it to spread into the membranes of the mouth, and repeating the dose after 10 minutes until the symptoms are controlled.

An excessive estrogen/progesterone ratio is more generally involved in producing or aggravating symptoms than either a simple excess of estrogen or a deficiency of progesterone, but even this ratio is conditioned by other factors, including age, diet, other steroids, thyroid, and other hormones. The relative estrogen excess seems to act by producing tissue hypoxia (as reported in my dissertation, University of Oregon, 1972), and this is the result of changes induced by estrogen in alveolar diffusion, peripheral vascular changes, and intracellular oxygen wastage.

Hypoxia in turn produces edema (as can be observed in the cornea when it is deprived of oxygen, as by a contact lens) and hypoglycemia (e.g., diminished ATP acts like insulin), because glycolysis must increase greatly for even a small deficiency of oxygen. Elevated blood lactic acid is one sign of tissue hypoxia. Edema, hypoglycemia, and lactic academia can also be produced by other “respiratory” defects, including hypothyroidism, in which the tissue does not use enough oxygen. In hypoxia, the skin will be bluer (in thin places, such as around the eyes), than when low oxygen consumption is the main problem. Low thyroid is one cause of excess estrogen, and when high estrogen is combined with low thyroid, the skin looks relatively bloodless.

Symptoms in cycling women are most common around ovulation and in the premenstrual week, when the estrogen/progesterone ratio is normally highest. At puberty, in the early twenties and in the late thirties and menopause are the ages when the ratio is most often disturbed--and these are also the ages when thyroid disorders are commonest in women.

The individual who suffers from one aspect of the progesterone (and/or thyroid) deficiency will tend to develop other problems at different times. With cyclic depressions or migraine headaches at age 22, there will possibly be breast disease later, and often there will be problems with pregnancy. These people with a history of sever symptoms are the ones most likely to have severe problems around menopause. Prenatal exposure to poorly balanced hormones seems to predispose the child to later hormone problems.

Excess stress (which can block progesterone synthesis and elevate estrogen) may bring on symptoms in someone who never had them. Spending a summer in Alaska, with an unusually long day, may relieve the symptoms of a chronic sufferer. Dark cloudy winters in England or the Pacific Northwest are powerful stressors, and cause lower production of progesterone in women, and testosterone in men. Toxins can produce similar symptoms, as can nutritional deficiencies. A very common cause of an estrogen excess is a dietary protein deficiency--the liver simply cannot detoxify estrogen when it is under-nourished.

With a diet high in protein (e.g., at least 70-100 grams per day, including eggs) and vitamin A (not carotene), I have found that the dose of progesterone can be reduced each month. Using thyroid will usually reduce the amount of progesterone needed. Occasionally, a woman won't feel any effect even from 100 mg. of progesterone; I think this indicates that they need to use thyroid and diet, to normalize their estrogen, prolactin, and cortisol.

Progesterone stimulates the ovaries and adrenals to produce progesterone, and it also activates the thyroid, so one dose can sometimes have prolonged effects. It shouldn't be necessary to keep using progesterone indefinitely, unless the ovaries have been removed. In slender post-menopausal women, 10 mg. per day is usually enough to prevent progesterone deficiency symptoms.

In a 10% solution of progesterone in vitamin E, one drop contains about three milligrams of progesterone. Normally, the body produces 10 to 20 milligrams per day. A dose of 3 or 4 drops usually brings the blood levels up to the normal range, but this dose can be repeated several times during the day if it is needed to control symptoms.

For general purposes, it is most economical and effective to take progesterone dissolved in vitamin E orally, for example

taking a few drops on the lips and tongue, or rubbing it into the gums. (It is good for the general health of the gums.) These membranes are very thin, and the progesterone quickly enters the blood. When it is swallowed, the vitamin E allows it to be absorbed through the walls of the stomach and intestine, and it can be assimilated along with food, in the chylomicrons, permitting it to circulate in the blood to all of the organs before being processed by the liver. These droplets are smaller than red blood cells, and some physicians seem to forget that red blood cells pass freely through the liver.

For the topical treatment of sun damaged skin, or acne, wrinkles, etc. the oil can be applied directly to the affected area.

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