

## Estrogen (oestrogen)

Estrogen is the collective term for the 3 differing types of Estrogen; Estrone (E1), Estradiol (E2) and Estriol (E3). In ladies, estrogens are primarily made in the ovaries and also in abdominal fat. This is why a fatter girth leads to higher estrogen levels, which in turn leads to elevated estrogen levels.

Estrogen has a few roles in the body including:

- Stimulating growth of cells in the uterus and the body in general
- Causing the secondary sexual characteristics
- Assists with pelvic floor control and tone
- Decreases bone breakdown
- Decreases thyroid function
- Increases aldosterone and prolactin secretion
- Affects mood, concentration and memory
- Helps prevent Alzheimer's Disease, and increases blood flow to the brain
- Plays a large role in facilitating the growth of brain cells (nerves and dendrites)
- Plays a role with fertility and pregnancy

### Estrone (E1)

This estrogen is the main estrogen produced by the body in post-menopausal ladies. Therefore it is found in higher levels in post menopausal ladies. As the ovaries in post-menopausal ladies have shrunk, the production of E1 is from fat, liver and skin. This is one reason why ladies put on fat around their stomach as they age.

E1 is broken down into 3 "metabolites". One is protective, referred to as 2 (OH) Estrone, the second is not good, referred to as 16  $\alpha$  (OH) Estrone and the third one is toxic and referred to as 4 (OH) Estrone. A disruption in the balance of these hormones leads to certain cancers and osteoporosis.

High 16  $\alpha$  (OH) Estrone and low 2 (OH) Estrone is associated with breast and prostate cancers

Low levels of 16  $\alpha$  (OH) Estrone and high levels of 2 (OH) is associated with osteoporosis.

### Estradiol (E2)

This is the most potent estrogen, is made in the ovaries of pre-menopausal ladies and is highest during the pre-menopausal years (ie when the ovaries are active). Over the ladies' cycle it will fluctuate. It generally has a quick peak with ovulation (about day 14 in an average cycled-lady and one week after ovulation).

E2 also breaks down to produce 2 "metabolites" being: 2 (OH) and 4 (OH).

### Estriol (E3)

This is the protective estrogen and helps prevent endometrial and breast cancers.

## Ratios

Often the quantity of circulating unbound estrogen is not as important as its relative ratios.

Estrogen ratios relative to progesterone are very important.

Follicular stage (ie the first day of your period until ovulation), E2 : Progesterone should be 1:200

Luteal stage (ie from ovulation until the menses – or period), E2: Progesterone should be 1:50

Ratios of estrogens should be: E1: approx 10%

E2: approx 10%

E3: approx 80%

Some other substances that can act like Estrogens include:

### Xenoestrogens

These are chemicals in your environment that mimic estrogens in the body and can bind the estrogen receptor sites. Some common xenoestrogens include; pesticides, neon tubes, DDT, DDE, plastics, car fumes and a few other sources.

To decrease your exposure to xenoestrogens try doing the following:

- Try to eat organic foods
- Decrease the use of plastics and glad wrap
- Don't reheat foods in plastic containers

### Phytoestrogens

These are plant derived estrogens and can be used to replace a ladies' low levels. These include soy, linseeds, flaxseeds and red clover