

Estrogens

The major **estrogen** in humans is estradiol. Other physiologically active are **estrone** and **estriol**. As these substances belong to the category of steroid hormones (hydrophobic), they are almost 100% transported in the blood bound to the so-called *SHBG* (sex hormone binding protein, globulin). Although oral estradiol is active after oral administration, it is better to use semisynthetic derivatives (mainly *ethinyl estradiol*) for the high first-pass effect.

Effects on tissues

Estrogens are essential for normal *adolescence* and sexual development. Under their influence, the reproductive organs grow and secondary sexual characteristics develop. **Metabolic effect** - in the plasma reduces the amount of cholesterol - increase TAG and decrease LDL (lipoproteins of low density) particles (less incidence of cardiovascular disease in women of reproductive age), reduce osteoclast activity (preventing osteoporosis), increased coagulation (increased synthesis of fibrinogen in the liver).

Clinical use

- **Replacement therapy** - treatment of hypogonadism in girls, prevention of postmenopausal changes in women - beneficial effect against atrophy of the uterus (vagina, uterus) and osteoporosis, less effective in the treatment of hot flushes (attacks of redness in the face and upper torso, associated with mental instability); hypertension must be affected only by symptomatic treatment;
- **hormonal contraception** - in combination with progestagens to prevent conception or induce death of a fertilized egg; high doses are used once as the so-called *morning after contraception* (not completely accurate labeling, as it often does not prevent the conception itself, but it has an abortifacile effect and thus prevents the development of pregnancy)
- **prostate cancer** - palliative treatment.

Toxicity

There is mainly a stimulating effect on the vagina, uterus and mammary glands. Medium doses lead to breast tension, endometrial hyperplasia and subsequent excessive bleeding. They can have a teratogenic effect when given during pregnancy. Long-term estrogen use is also associated with more frequent gallbladder disease.

Links

Related articles

- Renin-angiotensin-aldosterone system
- Contraception
- Estradiol

Bibliography

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