

## The Importance of Vitamin D During the 1st Trimester of Pregnancy

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**Abstract:** Vitamin D during pregnancy is one of the main factors for the proper development of the child. This valuable nutrient is involved in phosphorus-calcium exchange, regulation of nervous system activity and support of reproductive function. Cochrane Review 1 provides evidence that vitamin D deficiency during pregnancy is associated with dangerous complications.

Vitamin D belongs to the fat-soluble vitamins and unites all groups of substances. Vitamin D is especially important for pregnant women, children in the first year of life, nursing mothers, teenagers and people over 50 years old.

There are several forms of these nutrients: the vitamin is available in food and dietary supplements in the following forms:

**Key words:** D 2 - ergocalciferol; D 3 - cholecalciferol.

Maintaining the function of the nervous system, regulating phosphorus-calcium exchange, supporting hormonal levels and forming bone tissue is not a complete list of vitamin D. Calciferols are important substances. The body can get them not only with food, because the human body is able to independently produce vitamin D 3 in the skin under the influence of sunlight.

### **Useful features**

The main properties of vitamin D that are important for the body 2:

Support for reproductive health. Vitamin D is involved in the production of sex hormones - estrogens and testosterone. It is responsible for sperm quality and egg health.

Regulates the process of cell division. This is an important function for the proper development of the child and to prevent the risk of swelling.

### **It supports the circulatory system and thyroid function.**

During pregnancy, vitamin D participates in the development of the fetus from the earliest stages. The child receives valuable calcium and phosphorus, forms bone tissue and teeth, and forms a skeleton.

Strengthens the immune function, reduces the risk of infections.

Regulates absorption and metabolism of carbohydrates. If a person is overweight, his body often does not have enough vitamin D.

### **Supports the activity of the nervous system.**

It is known that vitamin D 3 acts as a hormone and regulates important biochemical processes. These are the absorption of calcium and phosphorus in the small intestine and the storage of calcium in the bones 3 .

### **How does vitamin D affect pregnancy?**

Vitamin D during pregnancy is an important component of successful motherhood. This is important at

all stages:

**Planning.** Regulates female hormones and healthy egg production and is responsible for sperm quality.

**Concept.** It helps in the successful conception of the child.

**Pregnancy.** Under the influence of vitamins, the child's skeleton develops and new cells grow.

Lactation. During this period, the newborn receives important nutrients through breast milk. A child in the first year of life needs vitamin D3 to prevent rickets.

For pregnant women, vitamin D is one of the main participants of the maternal-placental-fetus system 3 :

The placenta is the main organ of pregnancy. The placenta provides the baby with all the important substances and maintains the connection with the mother. Due to vitamin D, the hormonal function of the placenta serves to maintain and develop pregnancy, as well as physiological changes.

**Fetus.** Vitamins for the child are important even in the womb. It improves phosphorus-calcium exchange, helps the baby's development and skeletal formation.

**Mother.** Nutrient helps to prevent preeclampsia 4, reduces the risk of complications of pregnancy in the 1st and 2nd trimester, the development of placental insufficiency and uterine contractility disorders.

There is evidence that vitamin deficiency in HIV-infected women contributes to the transmission of the virus to the child and the development of anemia in the mother 5 .

Therefore, it is an important task for every expectant mother to ensure that vitamin D is fully absorbed by the body during pregnancy.

### **Vitamin D products**

Which foods contain the most vitamin D?

The main sources of calciferols are dairy products, eggs and fish. The highest amount of vitamin D can be found in the following 8 foods:

In addition to vitamin D, pregnant women should maintain a daily intake of proteins, fats and carbohydrates. A balanced diet is the key to a healthy pregnancy.

### **A drawback**

The lack of nutrients increases in winter. A lack of sunlight and a diet rich in vitamins can affect your health. Lack of vitamin D during pregnancy can be caused by 1:

Preeclampsia. This is an increase in the blood pressure of the expectant mother, which is mainly observed from the 20th week. It is one of the most important causes of maternal and perinatal (child-related) morbidity and mortality.

Placental insufficiency. This is the inability of the placenta to support the normal functioning of the child in the womb.

Severe pathologies of fetal development. Due to vitamin D deficiency, the baby does not receive calcium and phosphorus, its nervous system and skeleton develop with disorders, and the growth of new cells slows down.

### **Vitamin deficiency also has 2 effects:**

cardiovascular diseases - the risk of heart attack, stroke increases and arrhythmias appear;

depression and nervous diseases - increased fatigue and agitation are added;

arthrosis and osteoporosis - serious pathologies of bones and joints - which are caused by low absorption of calcium regulated by vitamin D;

immunity weakens - a person becomes vulnerable to any infection;

dermatitis and allergies - the skin reflects the internal vitamin status, rashes and peeling can indicate hypovitaminosis;

infertility - many couples cannot conceive a child due to calciferol deficiency, which applies to both women and men.

During pregnancy, the daily dose of vitamin D increases, so it is necessary to replenish its reserves regularly in order to have a healthy child.

### **Vitamin D norm**

The daily requirement of vitamin D is defined in the recommendations of the WHO on healthy nutrition 6, as well as in the order of the Ministry of Health of Ukraine No. 1073 7. For pregnant and lactating women, 5 mcg per day is the minimum required amount. If the expectant mother has an acute deficiency, the doctor selects an individual dose.

Sunny weather and diet do not always fully satisfy the need for vitamin D. Therefore, you can take additional complexes. For example, Elevit® Pronatal contains 500 IU of this important substance. In addition, there are 11 more vitamins and 7 minerals for a healthy pregnancy.

Vitamin D for pregnant women and other nutrients should be prescribed by a doctor after examination, tests and advice.

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