

# SPERMIOGRAM

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In infertile pairs in about 40% of cases the cause is male infertility, which can be complete or partial.

Spermioqram is an analysis of the whole semen (ejaculate), which consists of the determination of the physical properties of the liquid semen, and of the determination of the number, morphology and sperm motility.

Semen analysis is not an exclusive test of fertility. Almost 30% of the population with normal numerical indicators have abnormal sperm function (inability to grow ovarian or genetic abnormalities that prevents normal embryonic development). Contrary to, and with infertile semen, sometimes natural pregnancy can be achieved.

Prior to giving the ejaculate to the analysis it is necessary to have an abstinence of 2-5 days. In the case of too long abstinence in the ejaculate, there will be a reduction in the number of sperm, and in the case of short abstinence, the sperm mobility will be significantly reduced. The ejaculate is given to a sterile container at the Polyclinic or can be brought from home provided it is brought within one hour, ensuring that it is not exposed to cooling or higher temperature changes.

Complete semen analysis includes abstinence data, physical data (color, volume, odor, pH, viscosity, liquidfacture), quantitative and qualitative analysis (sperm concentration, percentage of mobile and immobile sperm, sperm velocity, sperm morphology), biochemical fluid seed analysis Fructose, acid phosphatase, citric acid, zinc), sperm antibodies (IgA, IgG), and functional assays (e.g., HOS-test).

## ANALYSIS OF SEMEN

### Macroscopic Analysis - Physical Properties

**VOLUME** - The volume of ejaculate is normal between 2 and 6 mL. Poor volume suggests a possible reduction in fertility.

**COLOR** - Ejaculation should be white. Changing the color may indicate some health problem. When the sperm concentration is very low, the ejaculate is almost transparent, and if it is reddish or brownish, then erythrocytes (blood) are likely to be present in the ejaculate.

**LIPOFACTIVITY TIME** - Lipofactivity is the time period in which the plasma from the seed, which is immediately clotted due to the presence of a clotting factor, reverts to the fluid due to the influence of the enzyme in the ejaculate from the prostate. The most common period is 20-30 minutes at room temperature. If it does not occur after one hour, it is indicative of prostate function disorders.

**Viscosity** - Viscosity refers to the density, ie the adhesion of the ejaculate.

**PH** - The normal pH value is between 7.2 and 8.0. Given the acidic environment of the vagina, the ejaculate should be slightly alkaline to protect the sperm.

**Microscopic analysis** - quantitative properties

**CONCENTRATION / NUMBER OF SPERM** - The number of sperm counts per milliliter and the total number of sperm counts in the ejaculate. The normal number of sperm in milliliters is more than 20 million sperm.

**Proportion - Mobility** refers to the proportion of moving sperm in the ejaculate. According to sperm mobility, they are divided into 4 categories:

A - the fastest sperm (moving on a straight line path) - progressive

B - Slightly slower than A sperm (movement on the whitewashed path) - Progressive

C - sperm moving in place - unprocessed

D - immobile sperm

For normal finding, the A + B sperm fraction must be greater than 50%, or A sperm counts greater than 25%.

**MORPHOLOGY** - The shape and appearance of sperm are one of the most important parameters of fertility estimation. For normal findings, there must be more than 30% of normal sperm. According to the World Health Organization's new criteria (WHO-2010) abnormal morphology is <5%.

Sperm consists of head, neck, middle and tail. Morphological normal sperm have:

Oval head with well-defined acrosome that covers 40-70% sperm head,

Tail one-sided and flat, 7-10 times longer than the head,

Absence of any defects in the head, neck, middle part or tail.

Sperm irregularities may occur during sperm production or during storage in epididymis.

- this criteria has more and more arguments!

**AGLUTINATION** - Agglutination is the occurrence of sticking of sperm and other cells (eg leukocytes) in the ejaculate, which significantly reduces fertility, and is most commonly caused by inflammation or infection. It can also be caused by sperm antibodies.

**LEUKOCITES** - If there is more than 1 million leukocytes in the ejaculate, there is a suspicion of inflammation. It should be noted that round cells in the ejaculate are not always leukocytes.

## **BEST DIAGNOSIS**

**ASPERMIA** - no ejaculate

**AZOOSPERMIA** - no sperm in the ejaculate

**OLIGOZOOSPERMIA** - reduced sperm count in the ejaculate

**ASTHENOZOOSPERMIA** - reduced proportion of progressively moving sperm

**TERATOZOOSPERMIA** - reduced proportion of morphologically correct sperm

**CRYPTOOZOOSPERMIA** - Absence of sperm in the native ejaculate, but presence in the soil after centrifugation

**NORMOZOOSPERMIA** - normal number of sperm in ejaculate, normal proportion of progressively moving and morphologically correct sperm

The judgment of the sperm potential and the normality of sperm requires an embryologist's experience and technological equipment.

In recent years, more and more authorities have published critical reviews of the new WHO criteria of the Laboratory Manual (5th edition, 2010), particularly with regard to the low level of morphological normality of sperm. This is why less male infertility and more

and more unexplained (idiopathic) sterility are referred to. Such a rate of idiopathic sterility is up to 30 to 40% (earlier 15%).

These are the reasons to apply the reference values from the 1999 "Laboratory Manual of the World Health Organization" in our IVF Polyclinic (4th Edition) because it is based on our long-term experience in evaluating male infertility in the treatment of maternal infertility.