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Assessment of oxidative stress in human semen

The purpose of this leaflet is to provide an overview of the nature and assessment of oxidative stress in sperm and the preparation for the test.

General information

The need for the assessment of oxidative stress in semen will be decided by a laboratory specialist at the Centre for Infertility Treatment or an andrologist at an outpatient appointment. The test can also be performed upon referral of a gynaecologist. There is a charge for the test. You can find information about the price on the homepage of East Tallinn Central Hospital at www.itk.ee. The test will be performed at the time agreed during the appointment at the Centre for Infertility Treatment at the Tõnismäe unit of East Tallinn Central Hospital (Hariduse 6) simultaneously with the standard semen analysis (ejaculate volume, concentration of sperm, total number of sperm, total motility, progressive motility and morphology).

The nature and measurement of oxidative stress in human semen samples

The occurrence of oxidative stress is greatly influenced by both external and internal factors. Toxic environment, lifestyle (smoking, alcohol, obesity), ageing and stress are the main external factors. The internal factors of oxidative stress include the inflammatory processes of the urogenital tract caused by varicocele, poorly treated infections or certain systemic diseases such as diabetes. With severe oxidative stress, spermatozoa mature under stress, and their ability to fertilize decreases.

Up to 40% of men with impaired reproductive function have a normal semen analysis, which means standard semen analysis is not always sufficient to diagnose male infertility.

The test results improve the accuracy of diagnosing male infertility.

If your test result is up to 1.38 mV/10^6 sperm/mL, your result is normal. If your test result is 1.38 mV/10^6 sperm/mL or higher, your oxidative stress is out of balance. If oxidative stress exists, anti-oxidative treatment can be started. You will get the results of the test from the laboratory specialist/andrologist or the patient portal iPatsient (https://ipatsient.itk.ee).

Indications for the test

The test is recommended for men aged 21–45 years who have been subjected to semen analysis in the following cases:

- unexplained (idiopathic) infertility,
- suspected infections (inflammation of the prostate),
- varicocele,
- poor semen quality,
- follow-up of anti-oxidative anti-inflammatory treatment,
- a woman has repeatedly failed IVF and IUI procedures,
- a woman has recurring miscarriages.

Preparation for the test

For the semen analysis to provide reliable results, please avoid ejaculation (for at least 2 but no longer than 7 days), alcohol, sudden temperature changes (hot sauna, bath), strenuous physical activity and fatigue for 2 to 4 days before sample collection.

It is not advisable to perform the test within one month after a disease with high fever (> 38 °C) or infection. Two weeks must have elapsed since treatment with antibacterial agents. Steroids and hormonal substances also have a strong adverse effect on semen quality.

Instructions for sample collection

The sample is collected by masturbation in a private room at the Centre for Infertility Treatment. Under exceptional circumstances, the sample may be collected at home. In that case, the semen should be delivered to the Centre for Infertility Treatment within one hour and kept at body temperature. If you wish to collect the sample at home, you should inform your doctor or laboratory technician, so they can book time for the test.

Avoid using a condom, as it contains substances that damage sperm. The semen should be collected in a container provided by the Centre for Infertility Treatment. Before masturbating, wash your hands and penis and make sure that the entire ejaculate is collected in the container. Otherwise, you should inform your doctor or the laboratory technician.

If you have any questions or would like to have further information, please call the Centre for Infertility Treatment on 5919 8395 (from Monday to Friday from 8 a.m. to 3 p.m.).

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