

Semen Analysis: An Essential Tool for Assessing Male Fertility

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DESCRIPTION

Semen analysis is an important diagnostic test used to evaluate a man's fertility potential. It assesses the quantity and quality of sperm in a semen sample and provides valuable insights into the health of the male reproductive system. For men experiencing difficulty conceiving, semen analysis is often one of the first steps in understanding the potential causes of infertility. This article analyzes the process of semen analysis, what it measures, how it is performed, and its significance in fertility diagnosis.

What is semen analysis?

Semen analysis, also known as a sperm count test, is a laboratory examination of a man's semen to assess sperm concentration, motility (movement), morphology (shape), and overall semen quality. It is a vital part of fertility assessments and is typically performed when a couple is struggling to conceive after a year of unprotected intercourse (or six months for women over 35). Semen analysis is often the first step in diagnosing male infertility, as it can reveal underlying conditions that may affect sperm production or function, such as low sperm count, poor sperm motility, or abnormal sperm morphology.

Key parameters measured in semen analysis

A standard semen analysis evaluates several key factors to determine the health and quality of the semen. These parameters include:

Semen volume: The total volume of semen produced during ejaculation is measured in milliliters (mL). A typical semen sample should be at least 1.5 mL, though variations can occur. Low semen volume can indicate issues with sperm production or other reproductive tract blockages.

Sperm count (concentration): Sperm count refers to the number of sperm cells present in a milliliter of semen. The World Health Organization (WHO) defines a normal sperm count as at least 15 million sperm per milliliter of semen. A low sperm count, also called oligospermia, can contribute to male infertility by reducing the chances of sperm reaching and fertilizing an egg.

Sperm motility: Motility measures the movement of sperm. Sperm must swim efficiently to reach and fertilize an egg. The sperm's motility is assessed by evaluating the percentage of sperm that are moving and how well they swim. Typically, at least 40% of sperm should be motile for a sample to be considered normal. Poor motility, known as asthenozoospermia, can reduce fertility.

Sperm morphology: Morphology refers to the shape and structure of sperm cells. A small percentage of sperm with abnormal morphology is normal, but a high percentage of misshapen sperm can affect fertilization. The WHO defines a normal morphology as having at least 4% of sperm with normal shape. Abnormal sperm shape, known as teratozoospermia, can hinder sperm's ability to fertilize an egg.

pH level: The pH level of semen can give insights into the environment within the male reproductive system. Semen typically has a slightly alkaline pH, ranging from 7.2 to 8.0. A pH level outside of this range can indicate an infection or other abnormalities in the seminal vesicles or prostate.

White blood cell count: The presence of white blood cells (leukocytes) in semen can indicate an infection or inflammation within the reproductive system. A normal semen sample should have no more than a few white blood cells. A higher count could point to conditions such as prostatitis or epididymitis, which may affect fertility.

Liquefaction time: Semen initially appears as a gel-like substance after ejaculation but should liquefy within 15 to 30 minutes. If liquefaction is delayed, it could indicate an issue with the prostate or seminal vesicles, and further evaluation may be required.

Fructose levels: Fructose is a sugar produced by the seminal vesicles that provides energy for sperm. Low or absent fructose levels may indicate a blockage in the seminal vesicles or a problem with sperm production.

How is semen analysis performed?

The procedure for semen analysis typically follows these steps:

Sample collection: The patient is asked to provide a semen sample, usually through masturbation, into a sterile container at

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the clinic or laboratory. For accurate results, it is important that the patient abstains from ejaculation for 2-5 days before the test. This ensures an adequate sperm count for analysis. In some cases, sperm may be collected through medical procedures like Testicular Sperm Extraction (TESE) if the patient cannot produce sperm through normal ejaculation.

Sample processing and evaluation: Once the sample is collected, it is processed in the laboratory, where it undergoes evaluation. The semen is analyzed for the various parameters mentioned above, including sperm count, motility, morphology, pH, and more.

CONCLUSION

Semen analysis is a critical tool in understanding male fertility and diagnosing potential causes of infertility. By assessing sperm

count, motility, morphology, and other key parameters, this test provides valuable information that can guide treatment decisions. If you or your partner are experiencing difficulty conceiving, semen analysis can help identify underlying issues and determine the best course of action. It's important to remember that sperm quality can be affected by a variety of factors, and abnormal results do not always mean that conception is impossible. With the right diagnosis and treatment, many men with fertility concerns can achieve a successful pregnancy.