

## **The Importance of a Detailed Semen Analysis**

Infertility in men represents one of the largest known causes of infertility amongst couples, contributing up to 50% of cases.

The single most important factor determining a man's fertility potential is the production of healthy sperm.

Although semen analysis has classically been used as a marker of a man's fertility potential by providing information about the sperm count, motility and shape, there are many other factors in a proper detailed semen analysis that can reveal a host of other symptoms, which are all too often neglected or overlooked. This is why we feel it is absolutely essential to provide you with the most comprehensive semen analysis that conforms to the current WHO guidelines, so that you will be given the correct diagnosis.

## **A Comprehensive Semen Analysis**

A fully comprehensive semen analysis provides information about the function of the pituitary gland, the testes, male accessory glands and spermatogenesis. A comprehensive semen analysis will show the following :

- Samples have been assessed within the appropriate period of sexual abstinence (2 – 5 days) and within 2 hrs of production to ensure reliability of results
- Description of overall appearance including volume, consistency, pH and presence of debris, all important for indication of disease, infection or inflammation or problems with the male accessory glands
- MAR test (IgA/IgG) as well as agglutination to pinpoint immunological infertility
- Presence of other cells and identification of inflammatory cells as a marker of inflammation or infection
- Sperm count.
- If no sperm are present in the semen, fructose should be determined as this is a marker for blockage or absence of the seminal vesicles.
- Motility and analysis of how progressively motile they are

- Viability testing in cases of low motility
- The shape of the sperm (morphology) with a detailed breakdown of defects, using Kruger strict criteria.
- Teratozoospermia index (TZI) as an indicator of multiple defects
- Comments to aid interpretation of results

### ***WHAT DOES A SEMEN TEST ACTUALLY ASSESS?***

- **CONSISTENCY**

Semen may seem quite thick immediately after ejaculation, but should liquefy completely within 60 minutes. If the semen remains viscous and threadlike, even after 60 mins, this may indicate that the sperm may have a difficult time moving through the semen out into the female reproductive tract.

- **VOLUME**

The fluid is produced primarily by the male accessory glands, namely the prostate and seminal vesicles. The amount of semen varies between 1 and 5 mls (less than a teaspoonful) in a normal ejaculate. If the volume is low, it may suggest the glands are not working properly

- **pH**

If the pH of a sample is too high, this could indicate a deficiency in prostatic fluid, which is acidic. If the pH is low, there may be an obstruction if the volume is low too.

- **SPERM COUNT**

This is given as number of sperm per ml, and is normally 20 million or more per ml. In relative terms, the sperm have to travel an exceptionally long and convoluted distance from the vagina into the fallopian tubes to meet the egg, and that is why even though millions of sperm are released in one ejaculate, only a few ever find their way to the egg itself. If the count is too low, the chances of even one sperm finding the egg is going to be very much reduced. A low sperm count is known as **oligozoospermia**. Complete absence of sperm in the semen is known as **azoospermia**

- **MOTILITY**

This describes the proportion of moving sperm in the sample. 50% or more is considered satisfactory. Clearly, there have to be a sufficient proportion of moving sperm in order to find the egg. Poor motility is known as **asthenozoospermia**

- **PROGRESSION**

This describes the way in which the sperm are moving and is graded accordingly, depending on how rapid and linear the progression is. Movement may also be sluggish and erratic, or there may not be any forward movement, just twitching on the spot. The WHO reference values are 25% or more with rapid, linear progression. Sperm have to be good swimmers, moving rapidly and in straight lines if they are to be successful in reaching the egg which is so far away.

- **ABNORMAL FORMS**

This describes the proportion of sperm which have abnormal shapes. Laboratories have different criteria for determining sperm shape (morphology). Assessment using the WHO criteria suggests that if the proportion of normal forms is less than 15%, then the chances of sperm being able to fertilise eggs in IVF are reduced. However, you may only need to have 10% normally shaped sperm to achieve conception within an acceptable time frame if you are trying to conceive naturally, as long as your motility and count are fine. Some laboratories use much more strict criteria for determining normal forms. Using Kruger strict criteria, it is not until there are less than 5% normal forms that fertilisation may be seriously impaired. A normal shape is important for fertilisation because once the sperm reach the egg, they must be able to recognise it and adhere to it. If the sperm have abnormal shapes, they are unlikely to be able to adhere properly, and so cannot fertilise the egg. A high proportion of abnormal forms is known as **teratozoospermia**

- **MAR OR IMMUNOBEAD TEST**

Sometimes, the sperm appear quite normal, but there may be antibodies present in the semen. The MAR or immunobead test looks for the presence of antibodies to the sperm which may cause the sperm to die or stick to one another, thus preventing them from being free to bind to the egg. The antibodies may also coat the sperm head, making it difficult for them to recognise the egg. If there are more than 50% sperm bound in the test, this may suggest an impairment of fertility

- **OTHER CELLS**

Other cells may be present in semen in low concentrations, but if they exceed a certain amount, this could indicate the presence of an infection or inflammation.

### **WHAT DO THE RESULTS MEAN?**

There are several factors that are looked for in the semen which allow your fertility potential to be assessed. The World Health Organisation, which publishes some of the most authoritative information on semen assessments, has suggested that there are no 'normal' values, because men with semen parameters that lie outside of the 'normal' fertile range may in fact be able to father a child and are therefore fertile. The normal reference values were determined from observations on men who were healthy and had fathered children. But remember, these values are not absolute, because they are not the minimum required for conception to occur. The values are therefore reference values, suggesting that the further outside the normal range your values are, the more difficult it will be to conceive.

## **SEMEN ASSESSMENT FAQ's**

### **WHY DO I HAVE TO ABSTAIN FROM EJACULATING FOR 2 - 5 DAYS?**

When producing a sample for semen analysis, you will usually be asked to abstain from ejaculating for 2 to 5 days before producing the sample for the test. Any longer than this will cause the sperm waiting in the epididymis to die off, thus giving a falsely high proportion of immotile sperm in your sample. On the other hand, if you ejaculate very near to the time of the test, there may be falsely low numbers of sperm in the sample.

### **WHY DO I HAVE TO PRODUCE A SAMPLE BY MASTURBATION ?**

This is because it is vital that there is no contamination of the sample with any other bodily fluids (e.g. vaginal, oral). Other fluids can be quite toxic to sperm. During natural intercourse, the sperm are only exposed to the vaginal secretions for a relatively short period of time as they quickly leave the vagina to pass into the womb. If you have difficulty masturbating, you can ask to be provided with a special 'non-spermicidal' condom upon request. **Do not use condoms purchased as contraceptives, because these contain substances that will tend to kill the sperm**

### **WHY IS IT NECESSARY TO BRING THE SAMPLE INTO THE LAB WITHIN 1 HR OF THE APPOINTMENT TIME?**

The semen must be examined as soon as possible after ejaculation, because if the sperm remain in the seminal fluid for too long, they will begin to die. After ejaculation into the vagina during normal intercourse, the sperm move very quickly out of the seminal fluid and into the female reproductive tract which is a more conducive environment for longer term sperm survival. Sperm will live for several days in the female tract, but only several hours in semen.