

كلية المستقبل الجامعة / قسم تقنيات المختبرات الطبية

المرحلة الثالثة / مادة التقنيات المختبرية

(الجزء العملي)

المحاضرة الرابعة



Seminal Fluid Analysis

seminal fluid, is an organic fluid that may contain spermatozoa. It is secreted by the gonads (sexual glands) and other sexual organs of male can fertilize female ova.

In humans, seminal fluid contains several components besides spermatozoa: proteolytic and other enzymes as well as fructose are elements of seminal fluid which promote the survival of spermatozoa, and provide a medium through which they can move or "swim."

Semen is produced and originates from the seminal vesicle, which is located in the pelvis.

The process that results in the discharge of semen is called ejaculation.

A semen sample collected in a sterile, wide-mouth container provided by the lab, usually collected on-site; sample must be analyzed within one hour of collection. Sexual abstinence for 2-5 days before sample collection; carefully follow instructions provided.

A semen analysis measures the quantity and quality of the fluid released during ejaculation. It evaluates both the liquid portion, called semen or seminal fluid, and the microscopic, moving cells called sperm. It is often used in the evaluation of male infertility.

Semen is a viscous, whitish liquid that contains sperm and the products from several glands. Sperm are reproductive cells in semen that have a head, midsection, and a tail and contain one copy of each chromosome (all of the male's genes). Sperm are motile, normally moving forward through the semen. Inside a woman's body, this property enables them to travel to and fuse with the female's egg, resulting in fertilization. Each semen sample is between 1.5 and 5.5mL (about one teaspoon) of fluid, containing at least 20 million sperm per mL, and varying amounts of fructose, buffers, coagulating substances, lubricants, and enzymes that are intended to support the sperm and the fertilization process.

A typical semen analysis measures:

***Volume of semen**

The typical volume of semen collected is between 1.5 and 5.5 milliliters (mL) of fluid per ejaculation

***Consistency (thickness) of the semen**

The semen should initially be thick and then liquefy within 15 to 30 minutes. If this does not occur, then it may impede sperm movement.

***Sperm concentration (density)**

Sperm concentration (also called sperm count or sperm density) is measured in millions of sperm per milliliter of semen. Normal is at least 20 million or more sperm per mL, with a total ejaculate volume of 80 million or more.

***Sperm motility**

Motility is the percentage of moving sperm in a sample and graded based on speed and direction travelled. At least 50% should be motile one hour after ejaculation, moving forward in a straight line with good speed.

***Number of normal and not normal (defective) sperm in terms of size and shape (morphology)**

Morphology analysis is the study of the size, shape, and appearance of the sperm cells. The analysis evaluates the structure of the sperm, whereby greater than 50% of those cells examined must be normal in size, shape, and length. The more abnormal sperm that are present, the lower the likelihood of fertility. Abnormal forms may include defective heads, midsections, tails, and immature forms.

***Coagulation and liquefaction**

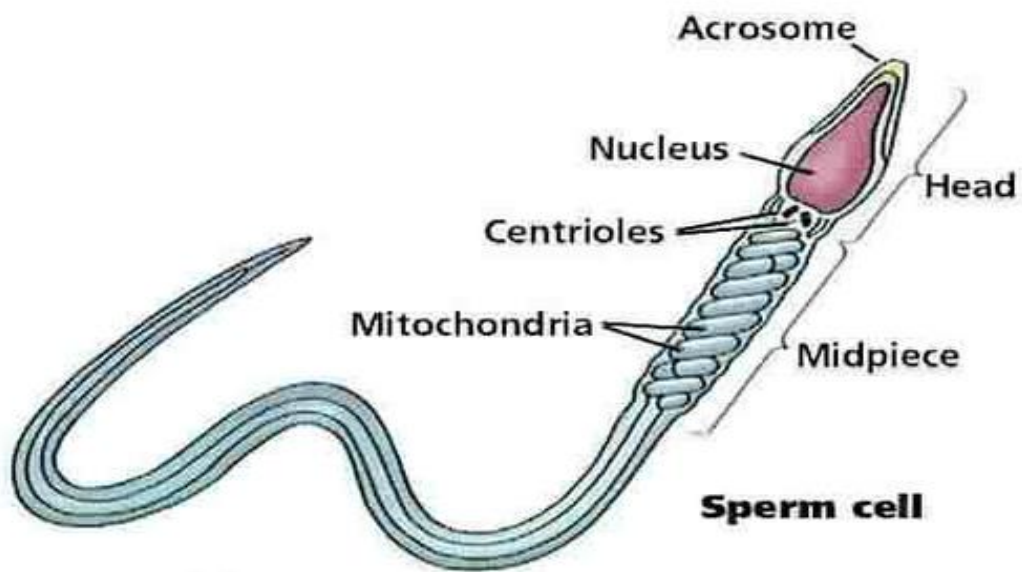
Agglutination of sperm occurs when sperm stick together in a specific and consistent manner (head to head, tail to tail, etc.) suggesting an immunologic cause to infertility. Clumping of sperm in a nonspecific manner may be due to bacterial infection or tissue contamination

***Fructose (a sugar in semen that gives energy to sperm)**

***pH (acidity)**

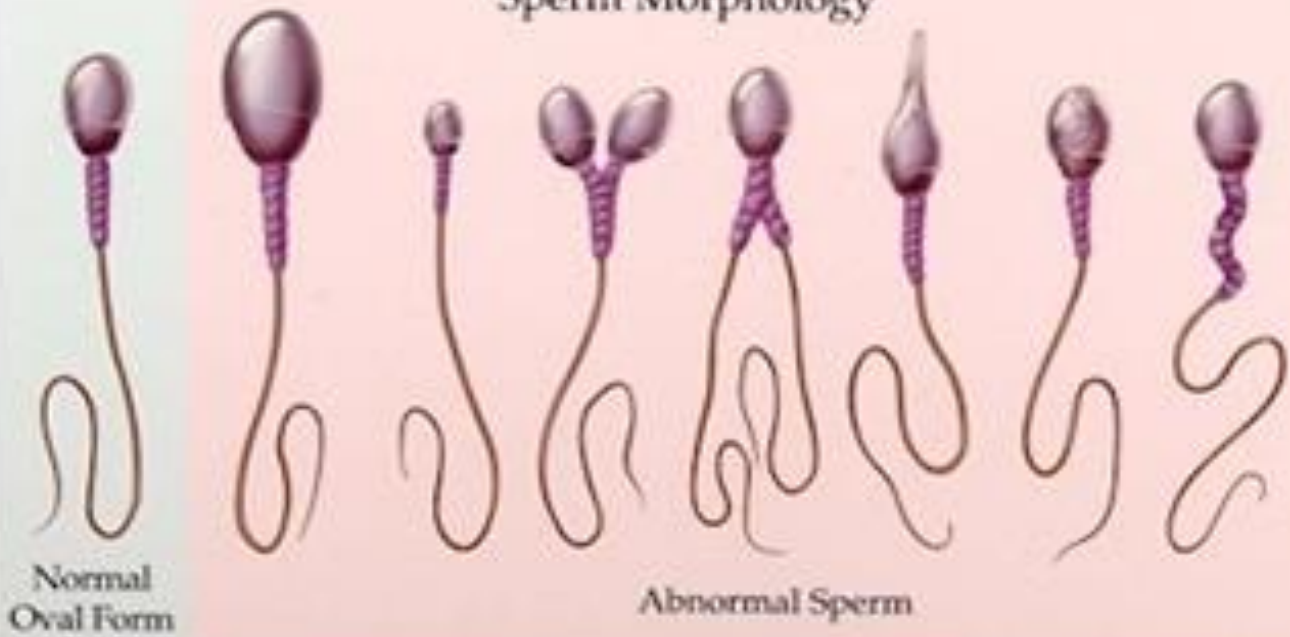
Semen pH should be between 7.2 and 7.8, fructose at 150-600 mg/dL

***Number of white blood cells (cells that indicate infection)**



Semen Analysis

Sperm Morphology



- Sperm count (number of sperm per cc)
- Motility (percentage of sperm moving)
- Sperm morphology

Abnormalities

- 1-Aspermia:-** absence of semen.
- 2-Azoospermia:-** absence of sperm.
- 3-Hypospermia:-** low semen volume.
- 4-Hyperspermia:-** high semen volume.
- 5-Oligozoospermia:-** Very low sperm count.
- 6-Asthenozoospermia:-** poor sperm motility.
- 7-Teratozoospermia:-** sperm carry more morphological defects than usual.
- 8-Necrozoospermia:-** all sperm in the ejaculate are dead.
- 9-Leucospermia: -** a high level of white blood cells in semen.