

Sex Hormone-Binding Globulin (SHBG)

WHAT IS SHBG?

SHBG is a protein produced in the liver that binds to sex hormones in males and females – testosterone, dihydrotestosterone, and estradiol. SHBG controls how much of these hormones are delivered to the body's tissues. SHBG tests are usually used to assess how much testosterone is available to be used by the body.

A high SHBG level means that it is likely that less testosterone is available to your tissues than is indicated by the total testosterone test. A low SHBG level means that more of the total testosterone is bioavailable and not bound to SHBG.

REFERENCE RANGES FOR SHBG

Normal ranges for SHBG are 11.2–78.1 nmol/L for males and 11.7–137.2 nmol/L for females (1).

REDUCED SHBG

Low SHBG levels mean that less testosterone is bound to SHBG and more testosterone is available to be used by the tissues around the body. Low SHBG can be a sign of hypothyroidism, type 2 diabetes, Cushing's syndrome, or overuse of steroid medication. In males, low SHBG can also indicate cancer of the testicles or adrenal glands. In females, low SHBG may also be due to polycystic ovary syndrome, one of the leading causes of infertility (2).

ELEVATED SHBG

High SHBG means that more of the testosterone is bound to SHBG and less testosterone is available to be used by the tissues around the body. High SHBG can be a sign of liver complications, hyperthyroidism, pituitary gland problems, or an eating disorder. High SHBG in males may also be due to a problem with the testicles (2).

TEST PROCEDURE

Correct specimen collection and handling is required for optimal assay performance.

This test requires a blood sample from a finger prick. All supplies for sample collection are provided in this kit. First wash and dry hands. Warm hands aid in blood collection. Clean the finger prick site with the alcohol swab and allow to air dry. Use the provided lancet to puncture the skin in one quick, continuous and deliberate stroke. Wipe away the first drop of blood (as it may be contaminated with tissue fluid or skin debris). Massage finger to increase blood flow at the puncture site and hold in a position that gravity facilitates the collection of blood on the fingertip. Transfer the blood to the blood collection card or blood collection tube (microtainer).

Avoid squeezing or 'milking' the finger excessively. If blood flow stops, perform a second skin puncture on another finger if more blood is required.

Dispose of all sharps safely and return sample to the laboratory in the provided prepaid return shipping envelope.

Upon receipt at the laboratory, the blood sample is analyzed by the fully automated Alinity i SHBG chemiluminescent microparticle immunoassay on the Alinity ci series analyzer.

TEST INTERPRETATION

This assay will provide accurate SHBG values for the tested specimen. This value is to be used in conjunction with other clinical and laboratory information for analyses of men's health.

DISCLAIMERS/LIMITATIONS

Certain medications and high levels of antibodies to streptavidin and ruthenium may affect SHBG test results. In addition, sub-clinical liver and thyroid issues could influence the interpretation of SHBG test results.

These results should be interpreted in conjunction with other laboratory and clinical information. Additional testing is recommended if SHBG results are inconsistent with clinical evidence.

False results may occur in specimens from individuals that have received preparations of mouse monoclonal antibodies for diagnosis or therapy. Additional clinical or diagnostic information may be required for these specimens.

Heterophilic antibodies present in the tested blood sample may interfere with this SHBG assay.

REFERENCES

- (1) Alinity i SHBG Reagent Kit. Revised March 2018. Abbott GmbH & Co.
- (2) Simo R, et al. (2015). Novel insights in SHBG regulation and clinical implications. *Trends in Endocrinol Metab.* 26(7): 376-383.