

# Cortisol

## General:

The glucocorticosteroid cortisol is formed in the zona fasciculata of the suprarenal cortex and is part of a feedback mechanism with distinctive day/night fluctuations through ACTH of the pituitary gland. The effects of cortisol are mainly involved in carbohydrate- and amino acid metabolism, in heart and circulation regulation as well as in the regulation of different organs (kidney, stomach, brain, etc). Cortisol in plasma is, to a large extent, bound to a specific protein (corticosteroid binding globulin). Only free cortisol is biologically active and is secreted by the kidneys.

The following tests are available:

- **Cortisol in serum**

Indication: diagnosis of hypo- and hypercortisolism

Material: 1 ml serum

Stability: 5 days at 2 to 8°C

TAT: same day, FML

Method: ECLIA

Units: µg/dl

Ref.- range: see report

Note: If the patient is taking multivitamins or dietary supplements containing high dose of Biotin (> 5 mg), the patient should stop taking it for at least 24 hours, before having the blood collection.

- **Cortisol, free, in urine**

## General:

The free cortisol in urine is the biologically active, unconjugated form of cortisol. Free (unbound) cortisol appears in the urine due to excretion of excess circulating cortisol after saturation of plasma protein binding capacity. Measurement of twenty-four hour urine free cortisol (UFC) provides an assessment of adrenocortical function and along with the low dose dexamethasone suppression test can be used to screen for Cushing syndrome.

Indication: Suspicion of hypercortisolism, Cushing syndrome

Material: 24 -hrs urine

Preanalytics: 24-hour urine (please indicate collected urine quantity!)

TAT: 7- 10 days\*

Method: LIA

Units: µg/24h

Ref.- range: see report

### • Cortisol in saliva

#### General:

In saliva cortisol is measurable in its free form only and the saliva levels are proportional to the free cortisol serum levels. Functional tests with cortisol in saliva are valid. Late-night saliva cortisol is emerging as the most sensitive diagnostic test for Cushing syndrome. Elevated saliva cortisol between 11:00 p.m. and midnight seems to be an early reliable marker for Cushing Syndrome as the cortisol secretion is usually very low at this time. Normal levels of late-night salivary cortisol nearly exclude the diagnosis of Cushing syndrome (except mild forms).

Material: 2 ml saliva

Preanalytics: Saliva to be collected in Salivette (call FML).

TAT: 10- 14 days\*

Method: EIA

Units: µg/l

Ref.- range: see report

### • 11-Deoxycortisol

#### General:

11-deoxycortisol (synonym: compound S) is an intermediate steroid in the glucocorticoid biosynthesis. As precursor of cortisol, it is derived from 17- hydroxyprogesterone by 11-beta-hydroxylase. This parameter is interesting for the diagnosis and follow up of treatment of suprarenal deficiency due to 11-beta-hydroxylase deficiency. Deficiency of 11-beta-hydroxylase causes congenital suprarenal hyperplasia in children and late onset hyperandrogenism in females. Under hypothalamic-pituitary control via the adrenocorticotrophic hormone (ACTH), the secretion of 11-deoxycortisol follows a diurnal rhythm: it reaches a peak in the morning (around 8 a.m.) and a minimum concentration during the night (between 0 to 4 a.m.).

Indication: differential diagnosis in AGS with beta-hydroxylase insufficiency, e.g. late onset in females, functional metopirone-test to test for the ACTH-reserve

Material: 1 ml serum

TAT: 7- 12 days\*

Method: LCMS

Units: ng/ml

Ref.- range: see report

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit  
<http://www.fml-dubai.com/parameter-listings/>