

Clinical Biochemistry Department  
Endocrinology Department

## PROLONGED (5 DAY) SYNACTHEN STIMULATION TEST

### INTRODUCTION

Synacthen is synthetic ACTH and is given to test the functional reserve of the adrenal gland in suspected cases of adrenal insufficiency. In the short Synacthen, resting and post Synacthen administration cortisol levels are compared. This is usually adequate to assess adrenal reserve. The long Synacthen was designed to confirm the diagnosis of primary adrenal failure. The prolonged stimulation of adrenals by the depot Synacthen may result in some degree of recovery by adrenal gland tissue which has become atrophied due to pituitary failure, whereas in organic adrenal gland disease, there is no response.

The ready availability of ACTH assays may now make this test protocol less frequently required although it may still be of value in diagnosis of early primary adrenal cortical failure.

### CONTRAINDICATIONS AND SIDE EFFECTS

Allergic reactions to tetracosactrin are a possibility, but rarely occur.

### PATIENT PREPARATION

The patient should remain at rest in bed prior to collection of the base-line sample.

#### Patients on therapeutic steroids

The cortisol assay is interfered with by therapeutic glucocorticoids (prednisolone / methyl-prednisolone / hydrocortisone). Therapy with such steroids should be discontinued and substituted with an alternative steroid (e.g. dexamethasone, betamethasone) at an equivalent dose (see BNF section 6.3.2) at least 3 days before the test. **Caution: withdrawal of glucocorticoids may be dangerous.**

### PROTOCOL

1. Whilst patient still in bed, take basal venous blood sample (6ml SST tube – yellow top)  
An additional sample for ACTH may also be collected for storage, pending results of the Synacthen test (5ml EDTA tube - purple top) but **must** be sent to Biochemistry immediately.
2. **1mg** of Tetracosactrin Depot is administered intramuscularly daily at the same time for 5 days.
3. Blood samples are collected **5 hours** after each injection (6ml SST tube – yellow top)

Label the samples with patient details and actual time taken. Send request form with full details of time of sample after last injection, the day of test and sample to Clinical Biochemistry Department as soon as possible.

### INTERPRETATION

The basal serum cortisol should be  $>140$  nmol/l with a rise at 5 hours following the first injection to at least 1000 – 1800 nmol/l, being maintained throughout the test. No response at the end of 3 days confirms primary adrenocortical insufficiency. An impaired but increasing response indicates adrenocortical insufficiency secondary to pituitary disease or prolonged excessive glucocorticoid administration.