

PhysioEx Lab Report

Exercise 4: Endocrine System Physiology

Activity 4: Measuring Cortisol and Adrenocorticotropic Hormone

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Pre-lab Quiz Results

You scored 100% by answering 5 out of 5 questions correctly.

1 Cortisol

You correctly answered: is a hormone important in the body's response to stress.

2 ACTH

You correctly answered: is a tropic hormone that stimulates cortisol release.

3 CRH

You correctly answered: has a tropic effect on the anterior pituitary gland.

4 Cushing's syndrome refers to

You correctly answered: a hypercortisolism, which could be iatrogenic.

5 A condition of hypocortisolism

You correctly answered: refers to low levels of cortisol in the blood.

Experiment Results

Predict Questions

No Predict Questions

Stop & Think Questions

1 Normally high levels of cortisol would inhibit release of

You correctly answered: both ACTH and CRH.

2 Which hormone(s) stimulate(s) the pituitary gland to release ACTH?

You correctly answered: CRH.

Experiment Data

Patient	Cortisol (mcg/dl)	High or low	ACTH (pg/ml)	High or low
1	3.74	Low	19.80	Low
2	35.09	High	13.70	Low
3	48.42	High	86.89	High
4	3.42	Low	98.40	High
5	49.14	High	17.03	Low

Table 4.1 Cortisol and ACTH Disorders

	Cortisol Level	ACTH Level
Cushing's syndrome (primary hypercortisolism)	High	Low
Iatrogenic Cushing's syndrome	High	Low
Cushing's disease (secondary hypercortisolism)	High	High
Addison's disease (primary adrenal insufficiency)	Low	High
Secondary adrenal insufficiency (hypopituitarism)	Low	Low

Post-lab Quiz Results

You scored 100% by answering 6 out of 6 questions correctly.

- 1** Under normal conditions, if the amount of secreted CRH increases, then

You correctly answered: **the amount of secreted ACTH will increase.**

- 2** Under normal conditions, if the amount of secreted ACTH increases, then

You correctly answered: **the amount of secreted CRH will likely decrease.**

- 3** Under normal conditions, if the amount of secreted cortisol increases, then

You correctly answered: **the amount of secreted ACTH will likely decrease.**

- 4** If a hypersecreting pituitary tumor develops, then an expected outcome is

You correctly answered: **a diagnosis of Cushing's disease.**

- 5** If a hypersecreting adrenal cortex tumor develops, then an expected outcome is

You correctly answered: **abnormally low levels of CRH due to negative feedback.**

6 A patient's chart lists the diagnosis of Addison's disease. Therefore, you expect

You correctly answered: abnormally high levels of ACTH.

Review Sheet Results

1 Which patient would most likely be diagnosed with Cushing's disease (view Table 4.1 in Experiment Results)? Why?

Your answer:

Patient number 5, due to the very high cortisol level and low ACTH level.

2 Which two patients have hormone levels characteristic of Cushing's syndrome (view Table 4.1 in Experiment Results)?

Your answer:

Patients 2 and 5.

3 Patient 2 is being treated for rheumatoid arthritis with prednisone. How does this information change the diagnosis (view Table 4.1 in Experiment Results)?

Your answer:

It means that the lower ACTH levels are expected considering it can cause iatrogenic Cushing's Syndrome.

4 Which patient would most likely be diagnosed with Addison's disease (view Table 4.1 in Experiment Results)? Why?

Your answer:

Patient number 4. This is because of the huge difference away from normal levels their labs are away from the typical high/low levels.