



Endocrine

434 Physiology team
presents to you:

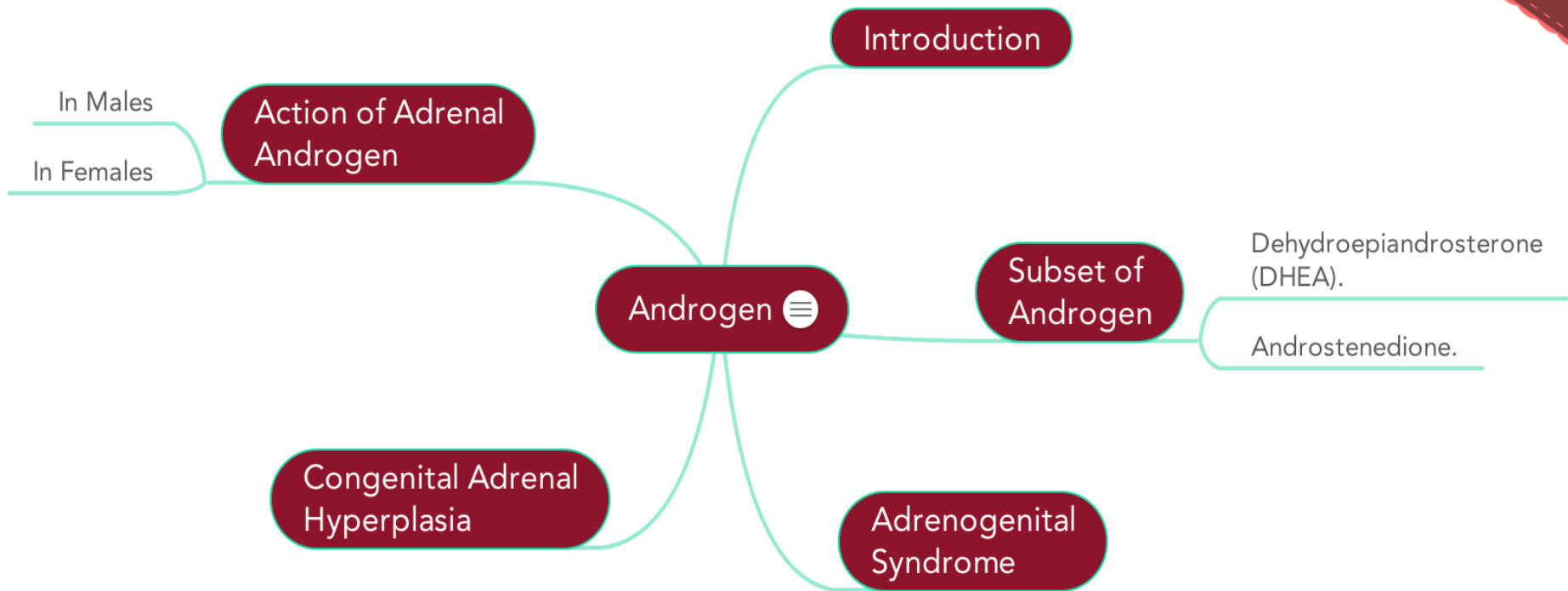
Androgens

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Please check out this link before viewing the file to know if there are any additions/changes or corrections. The same link will be used for all of our work [Physiology Edit](#)



Androgen ☰

Introduction

Action of Adrenal Androgen

In Males
In Females

Subset of Androgen

Dehydroepiandrosterone (DHEA).
Androstenedione.

Adrenogenital Syndrome

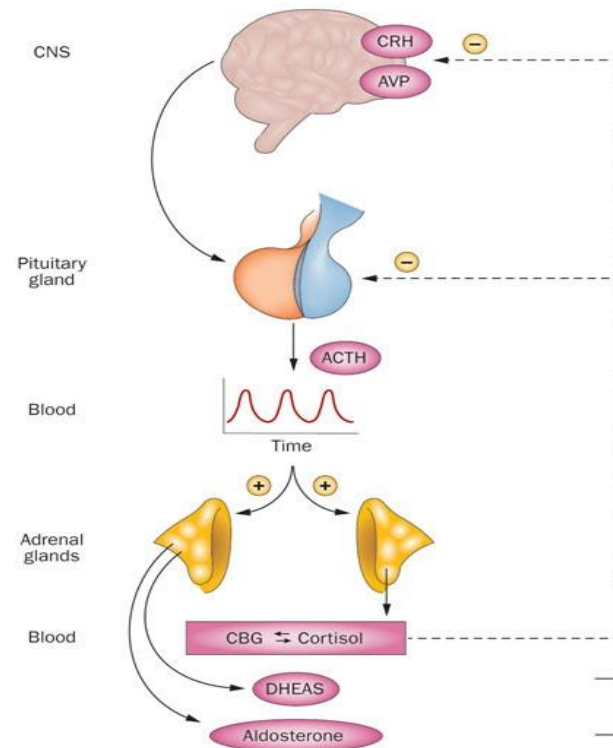
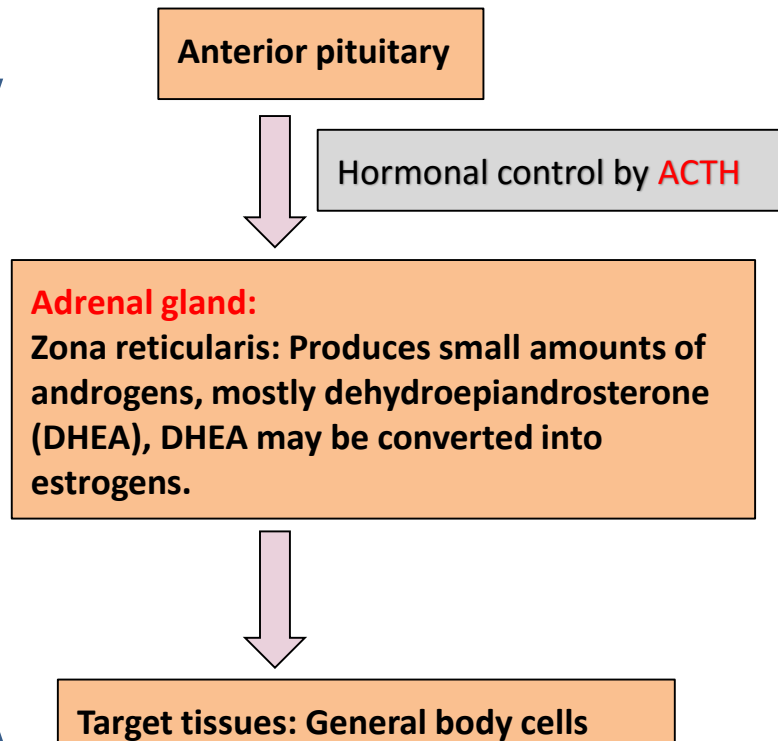
Congenital Adrenal Hyperplasia

Introduction

Androgens are the hormones that exert masculinizing effects and they promote anabolism and growth.

Testosterone from the testis is the major active androgen while the adrenal androgens have less than 20% of its activity.

Endocrine activity of adrenal gland :-



Adrenal androgens

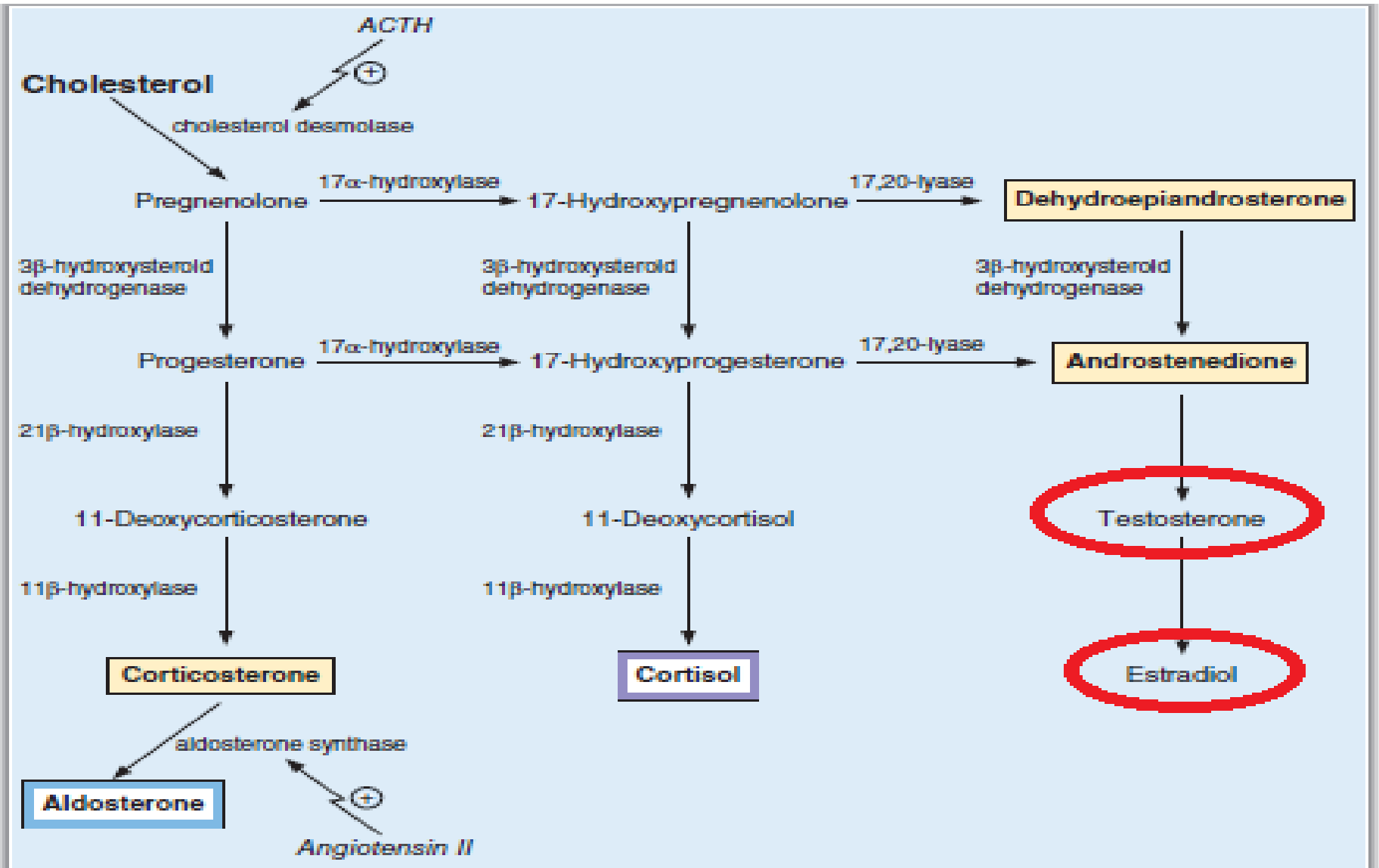
A subset of androgens, adrenal androgens, includes:

- 1-Dehydroepiandrosterone (DHEA),
- 2-Androstenedione.

A steroid hormone produced in the adrenal cortex from cholesterol. It is the primary precursor of natural estrogens. It is the most abundant adrenal androgen

An androgenic steroid produced by the **testes, adrenal cortex, and ovaries**. Converted metabolically to testosterone and to estrogens in the fat and other peripheral tissues. It is an important source of estrogen in men and postmenopausal women. Were used as an athletic or body building supplement.

- The adrenal cortex produces both sex hormones: androgens (male sex hormones) and estrogens (female sex hormones).
- The adrenal cortex in both sexes produces small amounts of sex hormone of the opposite sex, Additional small amounts of sex hormones come from non adrenal sources.
- Some testosterone in males** is converted into estrogen by the enzyme **aromatase** found in adipose tissues.
- In females**, ovaries produce androgen as an intermediate step in estrogen production. Little of this androgen is released in the blood instead of being converted into estrogen.



The diagram just for understanding, see the androgen pathway and how the testosterone and estradiol (estrogen) formed.

Actions of adrenal androgen :

In Males:

Same as testosterone .

In Females:

- 1-Stimulate growth of pubic and axillary hair.
- 2- Stimulate libido (development and maintain sex drive).
- 3- Pubertal growth spurt.

Production of androgen in female

-Adrenal cortices (Controlled by ACTH) , Ovarian thecal cells/stroma (Controlled by LH):

1-ACTH regulates adrenal production of androgen precursors, whereas luteinizing hormone (LH) regulates ovarian androgen production. Precursors DHEA and androstenedione are produced by the ovaries and adrenal cortices. The Adrenal cortex produces the majority of DHEA (80%) and its sulfate, DHEAS (> 90%).

2- Direct ovarian secretion is thought to account for one third of testosterone production, whereas the remainder is accounted for by conversion of androstenedione in peripheral or extragonadal sites, including adipose tissue and skin.

-Dihydrotestosterone is produced mainly by target tissues.

-Most androgens in postmenopausal women, produced by the adrenal cortex. whereas testosterone is believed to originate primarily from the ovaries.

Adrenogenital Syndrome

Hypersecretion of Androgen:

In pre-pubertal males: it causes the rapid develop of secondary sexual characters

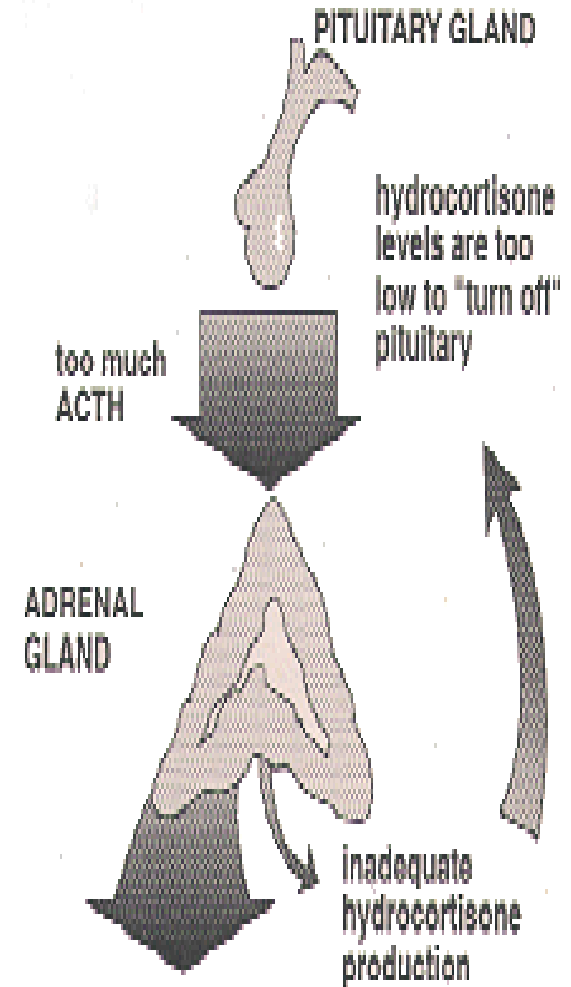
In females: causes beard growth, deeper voice, masculine distribution of body hair, and growth of the clitoris to resemble a penis.

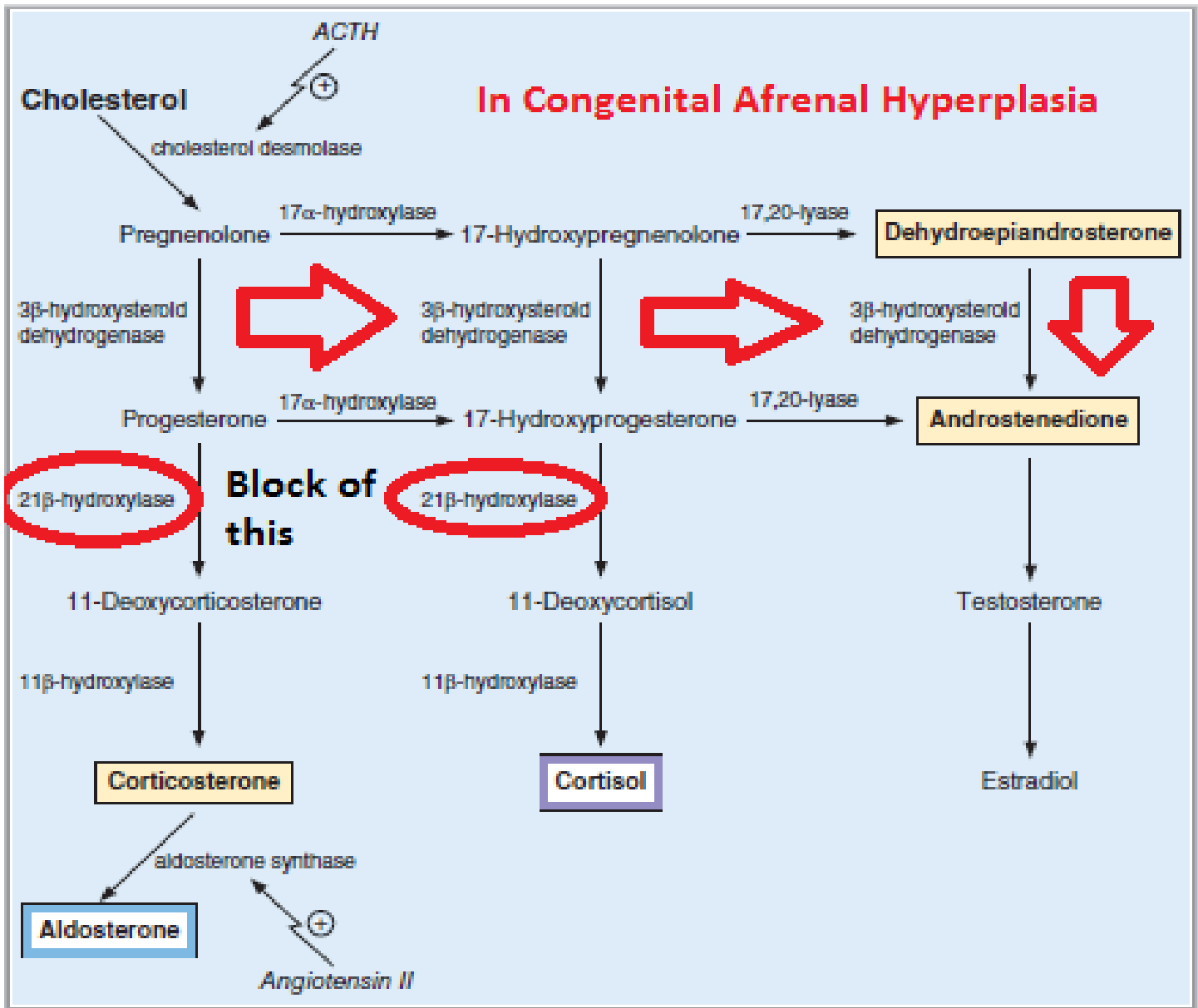
congenital adrenal hyperplasia

Causes:

-The different types of Adrenogenital syndrome are **inherited as autosomal recessive diseases** and can affect both boys and girls.

-**The defect is lack of an enzyme (21-hydroxylase)** needed by the adrenal gland to make the major steroid hormones of the adrenal cortex: cortisol and aldosterone. Due to the block in synthesis of these hormones, there is abnormal 'feedback' and steroids are 'diverted' to becoming androgens, a form of male sex hormones.





defect of:
21-Hydroxylase
 enzyme in
 congenital
 adrenal
 hyperplasia
 lead to
 decrease of
 cortisol and
 aldosterone
 level while the
 androgen will
 increase

Answer key: 1:C, 2:B ,3:D ,4:C

1-The enzyme associated with the conversion of androgen to estrogen in the growing ovarian follicle is:

- A.Desmolase
- B.Isomerase
- C.Aromatase
- D.Hydroxylase

2-which of the following substances is the most potent Androgen:

- A.Dihydroepiandrosteridione
- B.Dihydrtestosterone
- C.Androstendione
- D.Testosterone

3-In Congenital adrenal hyperplasia, which one of these enzymes is defect?

- A.11 Hydroxylase
- B.12 Hydroxylase
- C.17 Hydroxylase
- D.21 Hydroxylase

4-The mode of inheritance in congenital adrenal hyperplasia:

- A.autosomal dominant diseases
- B.X-Linxed dominant
- C.autosomal recessive diseases
- D.X-Linxed Recessive

1-What the Action of Androgen in females?

- 1-Stimulate growth of pubic and axillary hair.
- 2-Stimulate libido (development and maintain sex drive).
- 3-Pubertal growth spurt.

2-What is the subset of Androgen?

- 1-Dehydroepiandrosterone (DHEA).
- 2-Androstenedione.

MCQs

SAQs

Thanks for checking our work

Good Luck

Done by:

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Imagine that day,
where you can finally say, "I did it!"
When you can say, "I never gave up, I never quit!"
Imagine that day when you win that gold medal,
or reach your goal weight. Where these moments
of pain turn into memories for that goal you wanted
to obtain. It might take long to reach that moment,
but as soon as you get there you'll thank yourself for
The rest of your life.