


* Physiological Role of Androgen:

① Role in accessory sex organ: -

a) Prostate - It is made up of columnar epithelium 

② Castration (♂)

Result : Size of columnar cells of epithelium of prostate gland decreased.

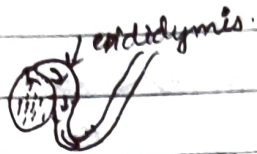


In castrated animal no testis do no sperm in epididymis

Castrated prostate gland
♂ + testosterone →  size increased

Conclusion: Structure and fn of prostate gland (all accessory organ) is regulated by male hormone.

(b) Epididymis -



Anti-androgen will inhibit activity of androgens on enzymes. Sperm motility will ↓ in epididymis.

(c) Seminal vesicle -

- In normal ~~an~~ animal, fructose concⁿ of seminal fluid is normal.
- In castrated animal (no androgen reaching to s. vesicle) then fructose concⁿ ↓.
- Castrated animal + testosterone → normal fructose level of seminal vesicle.

② Role in secondary sex characteristics:



Characters by which we can differentiate b/w sex whether it is male or female. Some of these characters are genetically determined and some are hormonally determined.

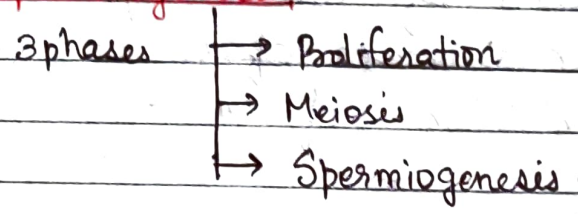
Hormonal determination of = Hair pattern
Voice
Skin colour

(a) Hair colour - Basic tendency to develop in female

(b) Voice - ^{in male} low pitched (on castration pattern changed) with breaking voice (at time of puberty it is obtained) \rightarrow in hoarse.

(c) Skin colour - Normal scrotal skin = pinkish
Castrated = colour changes (grey/colourless)

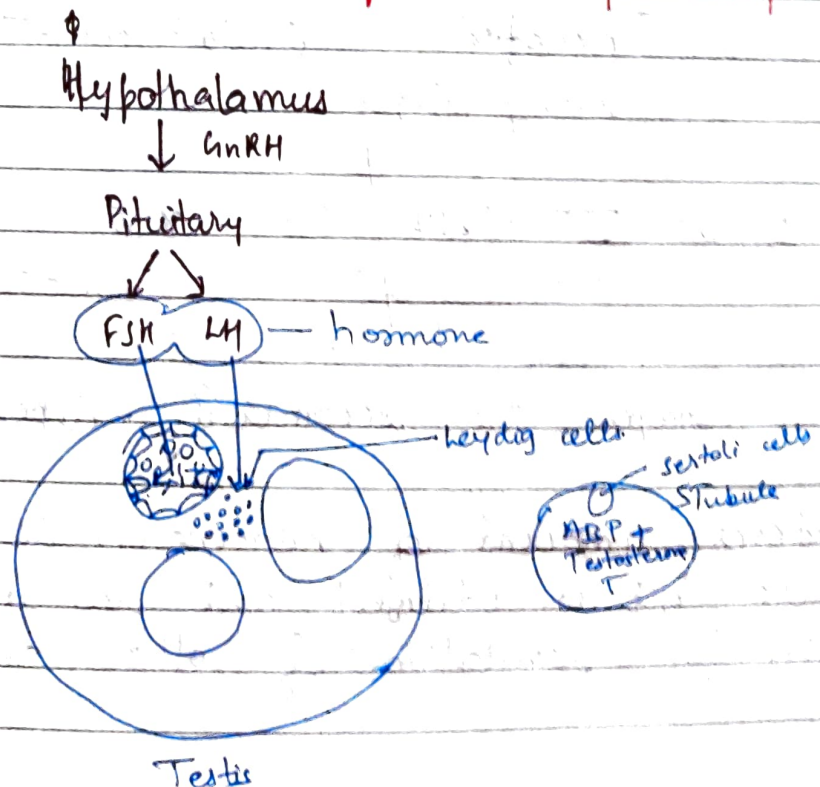
③ Role in spermatogenesis:



Spermatogenesis involves stages = I - XIV (Roman)

Spermiogenesis involves steps = 1 - 19 (Arabic)
 $\sigma \rightarrow \delta$

How male hormone influences spermatogenesis:



- FSH enters inside seminiferous tubule and act on Sertoli cells and in response cells produce **Androgen Binding Prots.**
- LH act on ~~deep~~ Leydig cells, outside ST.
On response of LH, Leydig cell secretes testosterone.

Now this testosterone diffuses inside ST from interstitial stitium. This binds with ABP here.

This combination ~~help~~ regulates -

- initiation of spermatogenesis (at puberty)
- mainly** ~~✓~~ maintainance of " (in adulthood)
- reinitiation of " (after adulthood)

NOTE:

For initiation FSH is required but for maintainance LH is required. In special cases LH alone may perform both initiation & maintainance ~~but~~ but FSH can't do it alone.

* Spermatogenesis is a continuous process but androgens are not secreted all the times as they are very economical.

Therefore (Testosterone - T)
during stages:

I - VI	VII - VIII	IX - XIV
	max T act only here.	

Other stages are secondarily dependent on testosterone

- Whatever amount of hormone (T) is secreted, only a little bit is utilized and rest is circulated in body for regulation of other androgen functioning

Doping athlete = they take steroids

↓
synergistic effect
on metabolism.

④ Descent of testis and thermoregulatory mechanism:

- Descent of testis from abdominal cavity to scrotum and its persistence there is σ^7 hormone dependent.

- Testis translocation to ab. cavity ~~and~~ dislocation from scrotum (natural condition) is via **cryptorchidism**.

⑤ Thermoregulation.

Scrotal temp. ($1-3^\circ\text{C}$) less than body temp.

Lowering of temp. is important for progression/maintenance of spermatogenesis.

Hyper-thermia leads to **aspermia**.