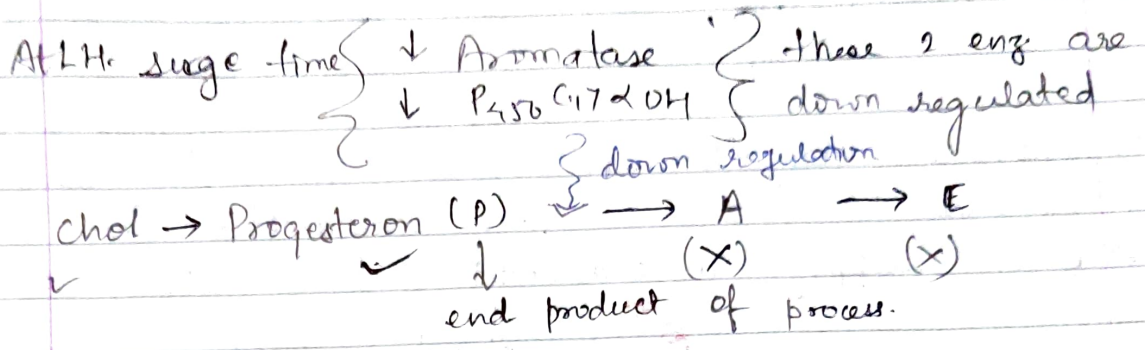


## PROGESTERONE SYNTHESIS

Produced in 100 times more conc<sup>n</sup> than E



## Physiological Action of E<sub>2</sub>

① To prepare ♀ reproductive tract for implantation that embryonic development can take place.

### (i) effect on rep. tract.

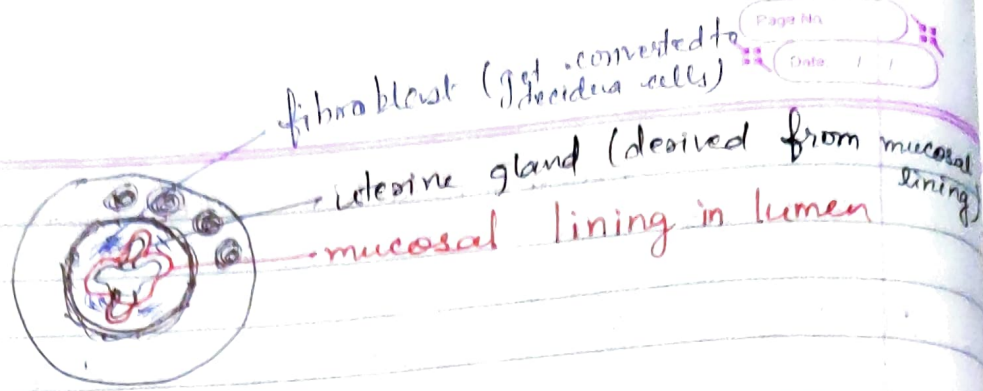
(A) At time of puberty it is req. for develop<sup>n</sup> rep tract.

- It promote development of oviduct, mam glands and.
- Mucosal lining of proliferation ↑.
- Muscular development.
- Control fat deposition.

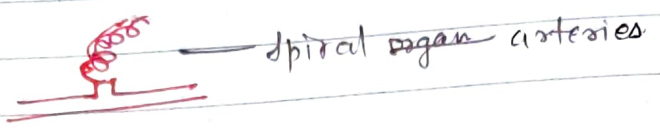
(B) In reproductive period

→ A continuous secretion of E<sub>2</sub> is req. to maintain rep. tract of female. On rema size ↓ es particularly muscular part of mucosal lining.

→ In Uterus, it is responsible for maintain<sup>n</sup> endometrium.



- There is elongation of uterine gland, there is response to  $E_2$ . Glycogen consumption ↑.
- Blood supply in endometrium ↑ in response to  $E_2$



This ↑ in vascularisation is due to ↑ in spiral artery arteries.

Increased proliferation and thickening of mucosal layer which provide a platform for implantation

- CHANGES IN MYOMETRIUM - ↑ contractility of muscle.
- At time of parturition = ↓ in  $P_4$  (Progesterone) ↑ in  $E_2$ .

↑  $E_2$  lead to ↑ oxytocin - Receptor and ↑ in  $P_4$ -R which facilitate parturition

→ A very extensive pressure is required to propel young one, so it ↑ muscular contraction and relaxation of myometrial muscle.

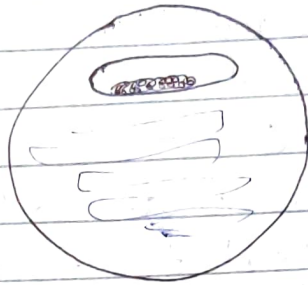
- At low  $E_2$ , muscular activity is quiescent. At this time ↑ OT-R ↑  $P_4$ -R.

(c) E is responsible for **Decidualization**.

↓  
Reaction of uterus in prep<sup>n</sup> for implantation.

Stroma cell  $\xrightarrow{\text{converted to}}$  decidua cells.

→ Decidua is a uterus with embryo.



Fibroblast  $\rightarrow$  Stroma cells  $\rightarrow$  Decidua cells (glandular)

↓  
hormone secreted are k/a **Deciduotrophin**. It is just like prolactin

Major role in decidualization is performed by P<sub>4</sub> (progesterone) but it can't perform process with oestrogen.

$E_2 + P_4 \xrightarrow{\text{initiator}}$  Decidualization

(ii) **CERVIX** ( $E_2$  effect)

**F<sup>n</sup>** - Regulate <sup>transport</sup> entry of sperm.

**str.** - small constricted area provided with valve, lined by mucus lining.

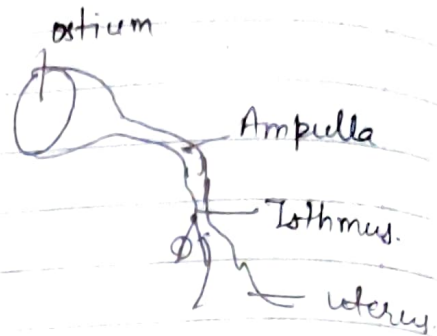


↓  
secrete mucus  
↓  
quality is under hormonal regulation.

Mucus secretion is controlled by  $E_2$  then mucus is watery, alkaline and support sperm transport. For progesterone its  $E_2$ 's reverse.

### (iii) Uterus

- Site for fertilization.
- Ovulated egg is trapped by fimbriae and moved inside duct due to ciliary movement.
- It has got muscular wall which show peristaltic movement which help in egg ~~propu~~ transport.
- Egg reaches to ampullary - isthmic region where fertilization takes place.

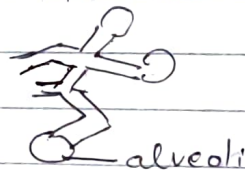


### (iv) Vagina

$E_2$  leads to Cornification  
That's why it is used as bioassay.

### (v) Mammary Gland:

$E_2$  - lead to lobulo-alveolar growth during puberty  
Duct system



~~has~~  $E_2 + GH + PRL + Cortisol \rightarrow$  Milk form<sup>n</sup> + secretion.

$E_2$  here also lead to stromal proliferation and fat deposition.

if Unregulated proliferation sometimes may lead to breast cancer.

(vi) Ovary

$E_2$  needed for

- follicular development
- selection of dominant follicle.
- Oocyte maturation
- $E_2 \rightarrow CL \rightarrow Luteolytic$

(vii) Pituitary

- -ve and +ve feedback (~~not~~ in secretion)
- $E_2 \rightarrow TRH$
- $O_2$  production

(viii) Behaviour

Responsible for mating behaviour (it alone can induce <sup>(much less)</sup>) but if it is given along with  $P_4$  then ~~not~~  $E_2$  is required.

**LIBIDO**: Sexual activity

**X** Cognitive<sup>n</sup>: Increases locomotor activity  
In ♀

**XI** Learning memory, ↑ed performing capacity.  
↳ Inhibition of Alzheimer ↓

**B** Behavioural changes at

- time of menopause like
- feeding disorder
  - anxiety.
  - depression.