



Benha Universty

Post-graduate students

Faculty of Agriculture

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Animal production department

Lactation Physiology

نموذج اجابة امتحان فسيولوجى ادرار اللبن - دراسات عليا

Time : 2 hours

Answer the following questions :

First question : Answer 3 (Three) only of the following:

- 1- Describe the development of the mammary gland in cows.
- 2- Discuss the changes in blood hormonal levels in relation to lactogenesis .
- 3- Explain the physiological factors affecting milk yield and its composition.
- 4- Define the following :
 - a- Milk secretion.
 - b- Milk ejection.
 - c- Mammogenesis.
 - d- Lactogenesis.
 - e- Galactopoietic.

اجابة السؤال الأول : (30 درجة)

- 1- DEVELOPMENT OF THE MAMMARY GLAND
- 2- Fetal period
- 3- Prepubertal
- 4- Postpubertal
- 5- Pregnancy
- 6- Lactation
- 7- Dry off or involution

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- alveoli

- ducts

*** Stromal Tissue: Connective Tissues**

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Fetal development :

Three distinguishable layers of cells:

Ectoderm: (outer layer) - skin / nervous system

Mesoderm: (middle) - muscle / blood

endoderm: (inner) - alimentary canal

(diagram)

2- Changes in hormonal level in relation to lactogenesis :

Complex of hormones

Insulin/IGF , Glucocorticoids and Prolactin

At birth

Prolactin high -Sudden drop in P4, E2 and PL -Insulin/IGF - Cell division -

Glucose uptake -Expression of milk protein genes

Growth Hormone -Nutrient uptake -Mammary blood flow

Thyroid hormones -Increased metabolism

Estrogen -Increase number of PRL receptors

Growth Hormone -Stimulates milk production by stimulating IGF-1

Increase in mammary tissue = increase in milk production

Affects blood flow

Thyroid Hormones-Increased metabolism

P4 must decrease to begin good milk secretion!

3-Physiological factors affecting milk yield and its compositions :

a-Stage of lactation.....

b-Colostrum stage.....

c-Persistency.....

d-Age at first calving.....

e-Service period and Gestation Effect.....

f-Animal age.....

g-Size and last drawn milk.....

h-Estrus.....

i-Disease.....

Second question : answer by true or false :

1-The most important support for the udder is the lateral suspensory ligament.

2-There is a 2- 6 fold increase in blood flow in the mammary gland starting 2-3 days prepartum .

3-The efferent nerves for mammary gland pierce the alveoli.

4-The maximal effect of oxytocin occurs after 7-10 minutes of milk let-down.

5-Exogenous oxytocin can override " peripheral inhibition of milk letdown "occurred due to physical stress applied on cow.

6-Prolactin release is inhibited by dopamine.

7-Suckling response inhibits PIH release.

8-Mammary gland can't develop without IGF, E2 and GH.

اجابة السؤال الثانى : (12 درجة)

1- False (.....median suspensory ligament)

2- True

3- False (The efferent nerves innervate the muscle fibers within the connective tissue surrounding the lobules, lobes, and the blood vessels. However, the nerves do not pierce the alveoli.)

4- False (The maximal effect of oxytocin occurs during the first 2 to 3 minutes of milk let-down.)

5- False (FPHYSICAL STRESS → Release of epinephrine, norepinephrine(adrenal gland)

→ Vasoconstriction in mammary gland AND

decreased binding of oxytocin at myoepithelial cells→ No letdown

(can't override with exogenous oxytocin)

6- True

7- True

8- True

Third question : Choose the best answer:

1- Pendulous Udder is found when :

a- the medial suspensory ligament are taller than the lateral one.

b- the medial and lateral suspensory ligaments are weakened.

c- the Medial and Lateral suspensory ligaments are strengthened.

d- none of the above.

2-Disadvantages of a pendulous udder include:

a- cleaning difficulty

b- milking difficulty

c- risk of injury

d- all of the above

3-structure that aids in blocking the escape of milk between milkings:

- a) teat Cistern.
- b) gland Cistern.
- c) Fürstenburg's Rosette.
- d) none of the above.

4-Between milkings approximately percentage of the milk stored in the teat and gland cisterns and the major ducts, equals :

- a) 30%
- b) 40%
- c) 50%
- d) 60%

5- One of most important hormones for milk production and the maintenance of lactation is :

- a) cortisone
- b) insulin-like growth factor (IGF)-1
- c) progesterone
- d) estrogen

6- Residual milk always present at the end of milking :

- a) 5-10%
- b) 15-25 %
- c) 30-40 %
- d) none of the above

7- Highest oxytocin release occurs when :

- a) udder surface is stimulated.
- b) teat ends are stimulated.
- c) teat's proximal areas are stimulated
- d) none of the above.

8 - regarding lactogenesis , after birth :

- a) prolactin level is high
- b) estrogen level is low

c) progesterone level is low

d) all of the above

9- exogenous oxytocin can override :

a) Peripheral Inhibition of Milk Letdown

b) Central Inhibition of Milk Letdown

c) both of them

d) none of them

10- regarding mammogenesis , growth hormone effect appears the most at :

a) late pregnancy

b) pre-puberty

c) lactation

d) a + b

11- local tissue mediator is :

a) transforming growth factors (TGF)

b) epidermal growth factors (EGF)

c) insulin-like growth factors (IGF)

d) all of the above

12- regarding mammogenesis , skin and nervous system embryological

origin is :

a) endoderm

b) mesoderm

c) ectoderm

d) non of the above

13- milk ejection is stimulated by :

a) oxytocin.

b) estrogen and progesterone.

c) Prolactin.

d) insulin

A) mammogenic hormone	B) lactogenic hormone
C)galactokinetic hormone	D) galactopoietic hormone

From previous list ,Choose one answer for each of the following :

14. estrogen ...
15. oxytocin ...
16. prolactin ...
17. insulin (IGF-1)...
18. thyroid hormones...

اجابة السؤال الثالث : (18 درجة)

- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 1- b | 2- d | 3- c | 4- b | 5- b | 6- b |
| 7- b | 8- d | 9- b | 10- d | 11-d | 12- c |
| 13- a | 14- a | 15- c | 16- d | 17- b | 18- b |

Good Luck

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