Fundamentals of fluids detection and secretions

Breast milk composition

جامعة ساوة

كلية العلـــــوم

قسم علوم الأدلة الجنائية
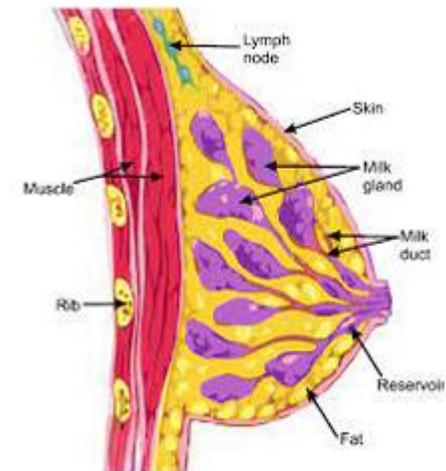
المرحلة الثانية

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Breast milk

Breast milk is the milk produced by mammary glands of human females. Breast milk is a complex fluid consisting of fats, proteins, carbohydrates and minerals, and is the primary source of nutrition for newborns and infants.

Functions of Milk:

1. Milk sugar provides galactose, a structural unit for growing infant.

2. In intestine, it gets metabolized to lactic acid which eliminates harmful bacteria.

3. Source of protein, mineral and vitamins.

Composition of breast milk:

1. **Macronutrients:**

   varies within mothers and across lactation. It contain fat, carbohydrate, proteins and minerals.

2. **Micronutrients :**

   many micronutrients vary in human milk depending on maternal diet and body stores. It includes vitamins A, B1, B2, B6, B12, D, and iodine.

3. Bioactive factors :

It includes:

- Living cells (macrophages and stem cells)

- Anti-infectious

- Anti-inflammatory agents, and antioxidants, growth factors, vitamins, hormones, enzymes, lysozymes , immunoglobulin.

Types of breast milk:

Colostrum

- It is the first stage of breast milk that is produced after birth and lasts for several day after child birth.

- It has a yellowish to cream colored thick appearance.

Colostrum

Transitional milk

- It occurs after colostrum stage and lasts for approximately two weeks until it is replaced by mature milk.

- The transitional milk contains high levels of fat, lactose, and vitamins to help the baby regain any weight lost after birth .

Mature Milk

- Final milk that is produced and lasts throughout lactation.

- There are two types:
  - **Foremilk** is produced at the beginning of each feeding. It contains water, vitamins, and protein.

  - **Hindmilk** is pushed out latter, it is heavier, richer in lipid and CHO.

Mature milk

Any questions?

Thank You