



MEDICAL UNIVERSITY - PLEVAN FACULTY OF MEDICINE

Department of pediatrics

Lecture № 6

FORMULA FEEDING



**Assoc. Prof. Ch. Petrova,
PhD**

INFANT FEEDING – BOTTLE FEEDING. FORMULAS

DEFINITION OF BOTTLE FEEDING

Human milk **is not available** for the infant **up to 6 month** of age and its alternative is one of the commercial infant **formulas** based on a modified cow's milk. Introduction of solid foods occurs after the 4-th month of age in the same way as in breast feeding.



DEFINITION OF MIXED FEEDING

If the breast milk is not enough during first 6 months of age, addition of formula after every breast feeding is needed.

Solid food is added as in the breast fed infants.



WHAT IS THE FORMULA?

- The best **alternative** of the breast milk.
- The commercial infant formula is based on a **modified cow's milk**.
- Formula is “breast milk like” in relation of:
 - Caloric distribution
 - Protein content
 - Fat content
 - Carbohydrates content
- **Vitamins** and **iron** are added
- Formula is in a **powder** form and equal amount of water must be added.



COMPOSITION OF BREAST AND COW'S MILK (g/100ml)

Milk	Protein	Fat	Carbohydrates	Energy kcal/100ml	Minerals
Breast	1..2 whey: casein = 80:20 (whey – <u>alpha</u> lactalbumin , lactoferrin, B12 binding protein, Ig A,G,M)	4..5 unsaturate d lipids	7..2 Lactose	74	0.21
Cow's	3..5 whey: casein = 20:80 (whey- <u>beta</u> lactglobulin)	3. 0 saturated lipids	4.7 lactose	67	0.74
Formula (Regular)	1..5 Whey: casein = 60:40	3..6	7. 2	74	0.30

SIMILARITIES AND DIFFERENCES BETWEEN BREAST MILK AND FORMULA

- The same caloric content.
- The same carbohydrate – lactose (**glucose+galactose**)
- The same principle proteins – Whey + Casein
 - Breast milk – human protein
 - Formula – cow's milk protein (requires to be hydrolyzed and altered to be more digestible and less allergical). Casein (a decrease amount). Whey albumins (addition).
- Fat – the same amount
 - Formula - cow's milk is skimmed
 - Vegetable oils are added (**corn, sunflower**)
- Minerals – Formula (**iron** and **Vitamin D** are added)

Special formulas

- Soy protein formula – without milk protein and lactose (**corn syrup**)
- Premature formula – high protein content (additional **whey albumins**)
- Casein hydrolyzed formulas – contain **amino acid premix**, more proteins, less fats and lactose (for milk protein intolerance and malabsorption status)
- Formulas for diarrhea – lactose free, hydrolyzed whey proteins, prebiotics (**oligosaharides** < 6 months), probiotics (**microorganism** > 6 months), middle chain triglycerides.
- Formulas for GER

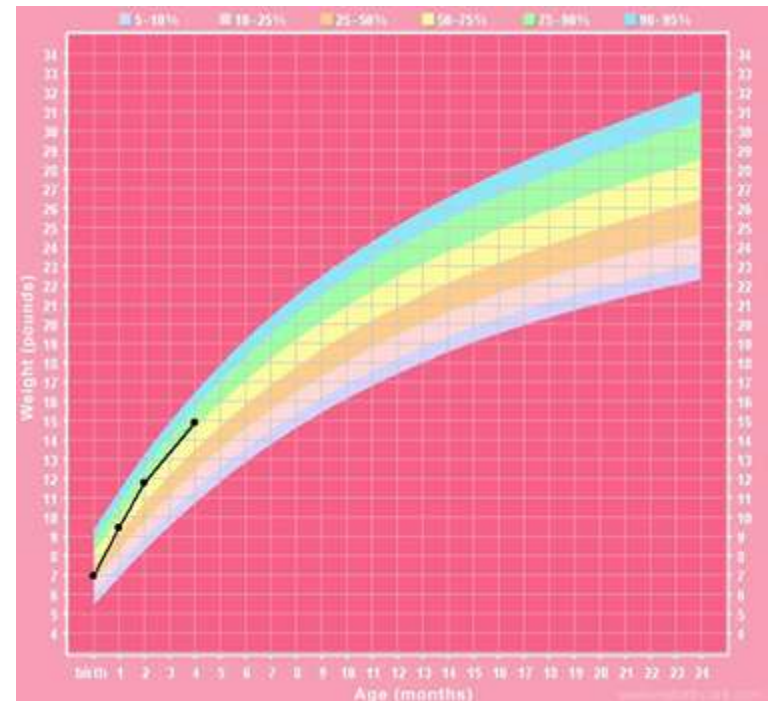
YOGURT FOR INFANT FEEDING

How to prepare:

Age (months)	Dilution (yogurt : water)
1-st	1:1 (1/2 cow's milk) + 5g sugar/100 ml
2-nd, 3-rd, 4-th	2:1 (2/3 cow's milk) + 5g sugar/100 ml
After 5-th	Undiluted + 5g sugar/100 ml

INDICATION FOR BOTTLE FEEDING

- Weight gain is not enough
- Weight curve is constant
- Weight curve is going down



WHAT TO DO TO INCREASE THE BREAST MILK?

- **More frequent** sucking (8 – 10 times every 2 hours)
- Using **both breasts** for every feeding
- Checking the mother's **diet**
- Checking **the body weight every day**
- Checking the body weight **before and after every sucking during 24 hours** to assess amount of breast milk



Mixed feeding for 2 month old infant

Sucked breast milk is only **50 ml**
Average quantity of milk for one feeding is **120 ml**.

Choice of feeding?

- Breast feeding
- Mixed feeding
- Bottle feeding

Mixed feeding:

- Addition of formula - ($120 - 50 = 70 \text{ ml}$)
- Feeding:
 - 6 times sucking + formula **70 ml** by spoon every 3 hours
 - 6 times sucking + 2/3 yogurt **70 ml** by spoon every 3 hours

