



# Iodine in Human Nutrition and health

## Lecture

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- Iodine (I) is an essential constituent of the thyroid hormone triiodothyronine (T3) and thyroxine (T4). Iodine from the diet is absorbed throughout the gastrointestinal tract. Dietary iodine is converted into the iodide ion before it is absorbed.
- The physiological actions of thyroid hormones can be categorized as (1) growth and development and (2) control of metabolic processes in the body.

- Thyroid hormones play a major role in the growth and development of the brain and central nervous system in humans from the 15th week of gestation to 3 years of age.
- If iodine deficiency exists during this period and results in thyroid hormone deficiency, the consequence is derangement in the development of the brain and central nervous system.

- The other physiological role of thyroid hormones is to control several metabolic processes in the body. These include carbohydrate, fat, protein, vitamin, and mineral metabolism. For example, thyroid hormone increases energy production, increases lipolysis, and regulates glycolysis.
- The risk of thyroid diseases depends on iodine intake and is characterized by the U-shaped curve where both excess and deficiency exert a negative effect. Iodine deficiency is associated with goiter, hypothyroidism, increased risk of miscarriage, preterm birth, congenital fetal abnormalities, and elevated incidence of neonatal death.

# What is iodine?

- Essential mineral needed in very small trace amounts
- Helps with thyroid function and prevents goiter
- Helps prevent birth defects like cretinism, a condition characterized by severely stunted physical and mental growth



# Where is iodine found?

- Varying amounts in the soil
- Table salt – iodized since the 1920's
- Seafood and seaweed
- Small amounts found in:
  - Grains
  - Dairy
  - Meat



# Why add iodine to salt?

- Iodine was one of the first food fortifications designed to prevent a common health issue (goiter). Later discovered to prevent certain birth defects (cretinism).
- Salt was chosen for iodine supplementation because everyone routinely uses salt and fortification is easy and inexpensive.



# How much iodine is in salt?

- One teaspoon of iodized salt contains 400 micrograms (mcg) of iodine.
- Encourage participants to purchase iodized salt when they shop for salt.



# How much iodine is needed each day?

- Infants under 12 months of age: 110 to 130 mcg
- Children over age 1 year: 90 mcg
- Adults and adolescents: 150 mcg
- Pregnant: 220 to 250 mcg
- Breastfeeding Women: 290 mcg



# Why add iodine to supplements?

- Women of childbearing age are at higher risk of low iodine levels.
- There is an increased need during pregnancy and breastfeeding because mothers are the sole source of iodine for their babies.
- There is decreased use of iodized salt in U.S as people use more non-iodized salts (i.e. sea salt, kosher salt, flavored salts, rock salt)



# When are iodine supplements needed?

- Taking prenatal vitamins with iodine before and during pregnancy can help prevent Iodine Deficiency Disorders (IDDs).
- Taking vitamins with iodine while breastfeeding helps to maintain adequate iodine levels for mom and baby.



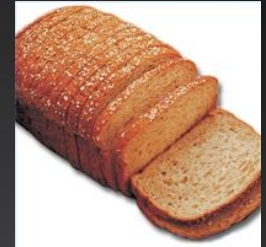
# What are the best vitamins to use for iodine?

- Recommend a vitamin that contains 150 mcg of iodine to use during pregnancy and breastfeeding.
- Not all prenatal multivitamins contain iodine. Encourage participants to read the labels before purchasing and look for iodine or potassium iodide.



# What does WIC (Women, Infants, and Children) recommend?

- Take prenatal vitamins with iodine when pregnant or breastfeeding.
- Do not increase salt intake but when adding salt to food, use iodized forms.
- Combine vitamins and food to reach the recommended levels of iodine intake.



WIC is a nutrition program for women who are pregnant, nursing, or have recently become pregnant, and infants and children up to and including the end of age 4 before they turn 5. An assistance program for pregnant women and children provided by the US government for all nationalities



	%DV		%DV
		Biotin 30 mcg	10%
70%		Pantothenic Acid 10 mg	100%
(ene)		Calcium 162 mg	16%
100%		Iron 18 mg	100%
100%		Phosphorus 109 mg	11%
100%		Iodine 150 mcg	100%
31%		Magnesium 100 mg	21%
100%		Zinc 15 mg	100%
100%		Selenium 20 mcg	20%
100%		Copper 2 mg	100%



Thank you

