Iodine Fact Sheet and References

What is iodine?

- Essential trace mineral
- Only known function is synthesis of thyroid hormones
  - Function of thyroid gland is to take iodine and convert it into T3 (triiodothyronine) and T4 (thyroid hormone) hormones, which control metabolism throughout the body
- Excreted through urine

Where do we find iodine?

- Table salt (iodized salt)
  - 1920’s – introduction of iodized salt and addition of iodine to other foods to eliminate iodine deficiency
- Seafood and seaweed
- Dairy and grains
- Dietary sources of iodine in U.S. are difficult to identify, but the level of iodine in foods is not considered a significant public health problem in the U.S.

Who’s impacted?

- 2.2 billion people worldwide are at risk for Iodine Deficiency Disorders (IDDs)
  - Of these, 30-70% have goiter and 1-10% have cretinism
- Many people living in mountainous areas and some low-lying delta regions have inadequate iodine intakes because of low iodine in the soil used for farming crops.
- Due to iodinization of salt, iodine deficiency in the U.S. and many Western nations has practically been eliminated. However:
  - 1970s-1990s - median U.S. urinary iodine (UI) excretion fell 50%, indicating that some subsets of population may be at an increased risk for moderate IDD.
    - Experts thought this might be attributed to a decreased salt and egg intake; removal of iodate conditioners in store-bought breads; and an increased use of noniodized salt in manufactured or premade convenience foods
  - NHANES 2001-2002 indicated that levels had stabilized
    - Even so, women of reproductive age consistently had the lowest UI levels
- Women of reproductive age are an important population subgroup to monitor
  - The initiation of iodine supplementation during pregnancy may be delayed due to woman being unaware of pregnancy during early weeks of gestation.
Pregnant women are vulnerable to iodine deficiency due to an increased renal clearance of iodine and transfer of iodine to fetus.

Breastfeeding women are also at risk for iodine deficiency due to loss of iodine in milk.

What are some risks of iodine deficiency?

- Worldwide, iodine deficiency is one of the most frequent causes of preventable mental retardation in children.
- Severe iodine deficiency – can cause cretinism and adversely affect cognitive development in children.
  - Wide spectrum of IDDs in infants:
    - Includes mental retardation, speech and hearing deficits, motor skill impairments, and ADHD
  - In children, the severity of IDD depends on the developmental stage it occurred in and its severity
    - The earlier the deficiency occurs and the greater the severity, the more devastating the neurological damage – first half of pregnancy is especially critical

What are some facts about iodine supplements?

- 49% of the different prenatal multivitamin brands marketed in the U.S. contain no iodine
- Potassium iodide contains 76% iodide
  - Most consistent form of supplemental iodine
- Iodine content of kelp varies
  - Some studies have found that actual levels are not always consistent with labeling

What are some risks of too much iodine supplementation?

- Iodine intakes have a wide safety margin
- Tolerable ULs:
  - Adults: UL=1100 µg/day
  - Young children: UL=200-300 µg/day

What are some WIC foods that contain iodine?

- Canned tuna and pink salmon
- Milk, eggs, cheese (iodine levels vary depending on brand)
- Whole wheat bread (iodine levels vary depending on brand)
References


