
Iodine

Summary

- Dietary iodine is needed to make essential thyroid hormones.
 - Not enough iodine in the diet can cause mental retardation and stunted growth in children and an enlarged thyroid gland (goitre) in adults.
 - Good sources of iodine include bread fortified with iodised salt and any type of seafood, including seaweed.
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Iodine is found in a range of foods including dairy products, seafood, seaweed (kelp), eggs, bread, some vegetables and iodised salt. Our bodies need iodine for the development of essential thyroid hormones.

The thyroid is a gland in the throat that regulates many metabolic processes, such as growth and energy use. If you don't have enough iodine in your diet, it can lead to an enlarged thyroid gland (goitre) or other iodine deficiency disorders.

Iodine deficiency is the world's leading cause of preventable intellectual disability or mental retardation in children. All women who are pregnant, breastfeeding or considering becoming pregnant should ask their health professional for advice about their individual dietary needs.

Thyroid hormones regulate metabolism

The thyroid hormones regulate the body's metabolic rate and promote growth and development throughout the body, including the brain. If there isn't enough thyroid hormone circulating in the blood, the brain (via the pituitary gland) sends a chemical message (thyroid stimulating hormone) to the thyroid gland, which then releases a measured dose of these hormones.

If a person's diet is too low in iodine, the thyroid gland gets larger and larger in an attempt to make more thyroid hormone. This overgrowth of the thyroid gland is called goitre.

Long-term iodine deficiency

An enlarged thyroid gland, or goitre, isn't the only side effect of not having enough iodine in the diet. If the deficiency is long term, hypothyroidism develops. This is a condition in which not enough thyroid hormone is produced. Symptoms include dry skin, hair loss, fatigue and slowed reflexes.

Iodine deficiency in babies and children

In the developing fetus, baby or young child, the effects of iodine deficiency are serious. They include stunted growth, diminished intelligence and retardation. Lack of iodine is a major problem in developing countries. It is the world's number one cause of preventable intellectual disability in children. There is evidence that some levels of iodine deficiency may be too mild to cause goitre, but may still retard brain development.

In Australia, studies conducted over the last decade in Victoria and New South Wales indicate the presence of mild-to-moderate iodine deficiency in all groups tested. Western Australia and Queensland appear to have adequate intakes, while South Australia is borderline.

Iodine fortification of bread

Since October 2009, iodised salt has replaced non-iodised salt in all bread sold in Australia (except organic bread). This is in line with the Food Standards Australia New Zealand (FSANZ) mandatory iodine fortification regulation, introduced to help address the re-emergence of iodine deficiency across most of the population.

International guidance and experience have shown that using iodised salt is one of the best ways to reduce iodine deficiency, and adding it to bread is the easiest way to add extra iodine to the food supply. Information on the effectiveness of mandatory fortification is yet to be released, but there is some evidence that it has improved the iodine status of some groups.

Bread fortified with iodised salt can provide enough iodine to avoid low thyroid activity for most people, without the need to add iodised salt to their diet. Salt contributes to hypertension (high blood pressure) and there are efforts globally to encourage people to eat less salt by avoiding adding salt in cooking and at the table.

Recommended daily intake of iodine

The recommended daily intake (RDI) for iodine depends on your age and life stage. The amount we need is very small (around one teaspoonful over a lifetime for most adults) when compared to other nutrients.

It is measured in micrograms (mcg, or μg), and requirements for various age groups are:

- younger children (1 to 8 years) – 90 mcg
- older children (9 to 13 years, boys and girls) – 120 mcg
- adolescents (14 to 18 years) – 150 mcg
- men – 150 mcg
- women – 150 mcg
- during pregnancy and breastfeeding – 220 mcg and 270 mcg respectively.

If you don't get enough iodine in your diet, you may need to consider taking a supplement. For most people, an extra 50 μg per day would be sufficient.

Iodine intake in Australia has dropped

In the past, low dietary levels of iodine were thought to be a problem only in developing countries. However, some researchers suspect that iodine intake levels in Australia have dropped considerably, perhaps by as much as half, over the past few decades. Ongoing research is looking at the problem and what might be done about it.

Some reasons for low iodine intake may include:

- consuming most of our salt in processed foods, as manufacturers do not use iodised salt in processed foods (except recently, in bread)
- less iodine in milk because of changes in treatment methods
- a possible reduction of iodine levels in Australian soils
- a reduction in the use of salt in cooking and table salt (particularly iodised salt).

How to get enough iodine in your diet

The best way to get the nutrients your body needs is as part of a healthy, well-balanced diet. The Australian Guide to Healthy Eating provides advice on recommended amounts of food from each of the five food groups. Eating according to this guide provides sufficient iodine for most people.

Some suggestions to make sure you get the required daily amount of iodine include:

- Enjoy a wide variety of nutritious foods from the five food groups.

- Seafood – dietitians recommend two to three meals of seafood per week to get the beneficial fish oils. Eating fish twice a week will also provide most adults with enough iodine to fulfil their average iodine requirement.
- Bread is now made using iodised salt in Australia – you should still select wholegrain and high-fibre varieties. Organic breads and ‘no added salt’ breads are the only exceptions to this rule.
- Seaweed, dairy products and eggs provide additional dietary sources of iodine.
- Some vegetables – may contain iodine, but only if they are grown in iodine-rich soils.
- Supplements – may be necessary if your dietary intake is inadequate. Many multivitamin capsules and tablets supply 100–150 µg of iodine.

Although it comes from the ocean, sea salt is not a good source of iodine. It is still important to avoid adding salt at the table or in cooking, but if you do, ensure it is labelled ‘iodised.’ Take care when choosing seafood, as some fish may contain high levels of mercury or chemicals.

Iodine and pregnancy

Pregnant women need higher levels of iodine, as lack of this nutrient can retard normal development in a baby. Eating two serves of seafood each week will not be enough to meet a woman’s iodine requirements during pregnancy.

In Australia, the National Health and Medical Research Council (NHMRC) recommends that all women who are pregnant, breastfeeding or considering pregnancy take an iodine supplement of 150 mcg each day to make sure their needs are met.

If you are pregnant, breastfeeding or considering becoming pregnant, ask your doctor for advice about your individual daily needs. In particular, women with pre-existing thyroid conditions should not take iodine supplements until they have checked with their doctor.

Seafood is a valuable source of iodine, but pregnant women, or women intending to become pregnant within the next six months, should take care to avoid seafood that may contain large amounts of mercury.

Mercury can be passed through the placenta and may affect the brain development of your baby. Some fish that contain high levels of mercury include shark, orange roughy, swordfish and ling.

Vegetarian diet

Vegetarians can help make sure they get enough iodine by including bread, seaweed and some soymilks that include extracts of seaweed as part of a healthy diet, consistent with the Australian Guide to Healthy Eating.

Where to get help

- Your doctor
- Dietitian
- Dietitians Association of Australia Tel. 1800 812 942

Things to remember

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This page has been produced in consultation with and approved by:

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