



IODINE

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Iodine is an essential trace element and an integral component of thyroid hormones. Thyroid hormones are required for normal growth and development of tissues and maturation of our bodies. Iodine deficiency is the most common preventable cause of mental retardation in the world; obtaining iodine through the food supply is therefore paramount. Iodine deficiency has re-emerged in Australia with the introduction of new practices of sanitization in the dairy industry and a decline in use and consumption of iodised salt.

Iodine Deficiency

Iodine Deficiency Disorders (IDD) refer to a number of disorders whereby iodine deficiency has an effect on growth and development. Such IDD include:

Goiter: Very low levels of iodine intake (50µg/day) are associated with goiter, which presents as an enlarged thyroid gland. Other symptoms include dry skin, fatigue and hair loss.

Cretinism: Severe iodine deficiency (30µg/day) during pregnancy can lead to cretinism in infants. This syndrome is characterized by mental deficiency, Spastic Diplegia, deaf mutism and shortened stature.

Food sources of Iodine

Sources of iodine include seafood, table salt and bread.

The iodine content of plants and vegetables is dependent on the environment and soil in which they are grown.

Marine sources: marine foods, including regular fish (e.g. tinned salmon) and shell fish (e.g. oysters) are the best sources of iodine.

Dairy: historically, dairy foods contained high levels of iodine due to the sanitisers used in dairy processing which contained iodophors. These sanitisation techniques have been phased out of the processes now involved in sterilisation of dairy equipment. As a result, dairy today has reduced levels of iodine and is a less reliable iodine source.

Salt: In Australia, iodide fortified salt contains high levels of iodine. However, use of iodised salt has been reduced due to increased awareness of the association between high salt consumption and hypertension.

Bread: As of October 2009, Australian bakers are required to replace regular salt with iodised salt in the baking of bread. Prepackaged breads must list 'iodised salt' as an ingredient on product labels, however, unpackaged bread does not require such labelling. Bakers are required to provide information regarding the use of iodised salt to customers on request.

Supplementation: Pregnant and breast feeding women may require iodine supplementation, though consultation with a doctor is recommended before commencing a supplementation program.

Table 1. Iodine content of common foods:

Food	Iodine content (µg per 100g)
Oysters	160
Sushi (containing seaweed)	92
Tinned salmon	60
Bread (made with iodised salt)	46
Steamed snapper	40
Cheddar cheese	23
Eggs	22
Ice cream	21
Chocolate milk	20
Flavoured Yoghurt	16
Regular milk	13
Tinned tuna	10
Bread (without iodised salt)	3
Beef, pork, lamb	<1.5
Tap water (varies depending on site)	0.5-20.0
Apples, oranges, grapes, bananas	<0.5

Table 2: Iodine recommendations in Australia and New Zealand

Age and Gender	RDI
1-8yrs boys and girls	90µg/day
9-13yrs boys and girls	120 µg/day
14-18yrs boys and girls	150µg/day
19->70yrs men	150µg/day
19->70yrs women	150µg/day
Pregnancy	220µg/day
Lactation	270 µg/day

RDI: Recommended Daily Intake

References:

1. Mahan L.K., Stump S.E. (2004): *Krause's Food, Nutrition, & Diet Therapy*, 11th Ed., Saunders, Pennsylvania. Australian Government, (2005): Nutrient Reference Values for Australia and New Zealand, "Iodine", pp: 181-185, accessed: <http://www.nhmrc.gov.au/publications/synopses/files/n35.pdf>, 19/06/09.

2. Food Standards Australia and New Zealand, (2009): *Mandatory Iodine Fortification*, accessed: 23/06/09, <http://www.foodstandards.gov.au>