**Do We Really Need That Much Iodine?**
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All of my clients know that the reason they get such impressive results is that we remove the obstacles that impair their metabolism, eliminate long-term restrictions on the body's processes and generally get them to function the way nature intended. Before any of these improvements can take place, the first step is always to correct underlying mineral deficiencies; almost every single client I see is seriously short of zinc, magnesium and iodine. Correcting these deficiencies does wonders for their sleep, immune system, digestion and energy levels, and the shrinking waistlines tell their own story. Relative to the RDI, iodine is the mineral required at higher levels to overcome deficiencies.

In most cases, I recommend 12.5mg of iodine per day, although some people seem to require up to 50mg and intake may need to be significantly higher in the early stages of correcting a long-standing deficiency. Even the lower figure comes in at almost one-hundred times the paltry RDA for iodine set by our government, yet represents marginally less than the average daily iodine intake of Japanese citizens (Abrahams, 2005). Clients are happy to recognise that, with an almost non-existence of both iodine deficiency disorders and iodism in the land of the rising sun, this is a very logical amount of iodine to consume each day. They are even happier to see the improvements in their health that accompany their improved iodine status. However, there are still a number of conservative 'food pyramid' nutritionists that cannot help but question why we should require this 'high' iodine intake.

A human's cellular requirement for iodine has not changed in in the 200,000 years we have lived on earth. However, there are a number of changes that have occurred in recent decades that have made a problem into a nutritional crisis. This can be summarised as an decrease in iodine intake, and an increase in other halogen elements. The halogens are a group of minerals that include iodine, fluorine, chlorine and bromine. Not only do they compete for intestinal absorption and for binding of halide receptors in the body, fluorine, chlorine and bromine are all toxic to human beings (although chlorine may, in its chloride form, provide some useful functions). It appears that, as the human race has moved away from the ocean and reduced it's intake of seaweed, we may have spent decades or even centuries living on the 'iodine borderline'. As far back as 1820, there have been records of successful treatment after improving iodine sufficiency. It appears that, in recent years, we as a society have moved from the 'iodine borderline' to the 'iodine wilderness'.

The changes that are implicated in this shift of status are:

**Reduced iodine intake.**
Medical iodophobia resulted from a flawed experiment on rats by Wolff and Chaikoff (1958), which suggested that milligram levels of iodine could suppress thyroid function. Despite widespread and trouble-free use of iodine for well over a century, the conclusions from these then-respected scientists were enough to scare the entire medical industry away from the use of Lugol's solution, which has previously been used as the de facto treatment for hypothyroid conditions. The response recorded by the scientists (dubbed the 'Wolff/Chaikoff Effect') has never been shown since, in rats, humans or any other species.

Suspicion abounds that the iodophobia was deliberately instigated by the pharmaceutical industry to clear the way for synthetic thyroxine which, co-incidentally, first became available in the same year to treat hypothyroidism; in one fell swoop, Lugol's solution was discarded to the memory bin and has remained there since.

A third of the world's population also live in an iodine deficient area. Whereas a slice of bread previously contained around 150mcg of iodine, this is no longer the case. Iodized salt and sea salt are proposed as solutions to the problem, but our declined intake of salt means that the average intake of iodine is now halved in recent decades and comes it at just over 200mcg per day (Miller, 2006).

**Fluoride, Chlorine and Bromine in municipal water.**
It is estimated that the treatment of drinking water provides around 10mg/litre of chlorine (IOS, 1989), 1mg/litre of fluoride (WHO, 1984). Bromide levels are not regulated, but the Drinking Water Inspectorate calculate the average UK dietary intake of bromide from water at 8.3mg/day (DWI, 2007). Naturally, those than drink more water receive more of these halogens, making iodine deficiency more likely.

Most people choose bottled water specifically to avoid the chlorine and fluorine that tap water contains.. However, more of a concern is the larger load of halogens that are inhaled or absorbed through the skin during baths and showers., Despite the fact that fluoride baths were a recognised treatment for hyperthyroidism in the 1930s, there is a great dearth of research on the absorption rate of halogens through the skin. One study that was done calculated the contribution of absorbed halogens to total twice that of those taken in through drinking water (Brown et al, 1984), and warmer water is known to increase the amount of chlorine that evaporates into the steam that we then breathe in.

In any case, it is fair to say that we are getting a significant dose of halogens from drinking and washing in municipal water and we can conclude that: the more tap water you drink, the more showers and baths you have in it, and the longer and hotter these showers are, the higher your exposure to halogens and the more insufficient your iodine status will become.

**Fluoride in tea and toothpaste**
At 69-88ppm concentrations, a typical cup of tea has between 17-22mg fluoride (Grove, 2001).
Organic tea, grown without the use of fluoride-containing pesticides, is known to have lower fluoride levels and the regions from which the leaves were sourced appears to have a clear effect on the fluoride levels, with some varieties from China showing markedly higher levels that others (Shu et al, 2003). The source of tea leaves clearly has a measurable effect on fluoride intake, which itself directly effects iodine status.

The fluoride added to toothpastes, normally in the form of sodium fluoride or sodium monofluorophosphate, has been shown to deliver up to 0.76mg of fluoride each day (Levy and Guha-Chowdhury, 1999). There is not sufficient research to know conclusively whether the toxic effects of fluoride are direct, caused by the displacement of iodine or both.

**Bromide in our foods**
Our foods contain significantly more bromide now than at any other time in our history. The use of methyl bromide and related pesticides on crops means that the intake of those eating plant foods daily may easily exceed 10mg/day (Baso-Cejas et al, 2007). This figure

may be multiplied by up to ten times if the foods were grown in soil that was recently treated (Coosemans and Van Assche, 1979). Naturally, if you eat twice the amount of salads than the average individual, then your exposure is increased accordingly. American consumers may suffer an even bigger bromine load as, unlike in most countries, the FDA refuses to ban the use of potassium bromate in baked goods or brominated vegetable oils in soft drinks like Mountain Dew.

**Bromine in our houses**

A number of prescription drugs, including a number of asthma inhalers, are actually formulated with bromine. Other drugs, including antibiotics and anti-depressants like Prozac, include fluoride. Whilst the EU has banned some of the controversial polybrominated diphenyl ethers (PBDEs), many remain in flame-retardant furniture, mattresses, carpeting and electronics.

With these factors in mind, who is at most risk of iodine deficiency? Essentially, your iodine status will be compromised if you:

- ever have showers in unfiltered water
- ever drink tap water
- eat vegetables
- drink tea
- use a commercial toothpaste
- own flame-retardant furniture

That's pretty much everyone and, interestingly enough, athletes drink more water, have more showers and (should) eat more vegetables. They are also losing up to 40mcg per litre in sweat (Consolazio, 1966). It is therefore no wonder that so many athletes get colds so frequently, even when they make the effort to take a multivitamin, vitamin C, glutamine and zinc. It also goes some way to explaining why 96% of the population is iodine deficient (Brownstein, 2007). Anyone who doubts their iodine status can take a test called the Iodine Loading Test; this simple procedure involves taking 50mg of iodine in the morning, before collecting all urine that passes in the 24 hours that follows. Those with good iodine status will pass out around 90% of the iodine,. However, the iodine-parched cells found in most people sees this figure drop to as low at 10%. Restoring iodine status in these individuals brings about noticeable, and in many cases dramatic, change.

As the demands of industrial revolution have left an indelible mark on society of today, especially in regards to the population shift from seaside hamlets to inland working towns. With a reduced dependency on the sea and it's food products, there has been a progressive drop in the intake of fish and a colossal drop in the intake of sea vegetables such as kelp. It appears society has been living on a 'iodine borderline' for a long time; this, combined with the change of practices in our food chain and the ubiquitous exposure to halogens, has resulted in a perfect storm of iodine deficiency. If you haven't had your iodine levels checked and are not taking steps to address your iodine intake, then there is a 96% chance that your cells are being starved of this crucial mineral. Taking steps towards correcting the situation should be a priority - there are 74 trillion cells in your body that need iodine, and each one will thank you.

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