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The iodine intake of the German population is insufficient!

Position paper from the Jodmangel e.V. working group on iodine intake in Germany

From conception right through to old age, the trace element iodine plays an essential role. It is a key component of the thyroid hormones tetraiodothyronine (thyroxine, T4) and triiodothyronine (T3), which, amongst other things, are hugely important for an optimal pregnancy, fetal and child brain development, normal growth, bone formation and energy metabolism. Iodine deficiency can have serious consequences, including physical and neuronal development disorders, reduced cognitive capabilities and impaired fine-motor skills as well as enlargement of the thyroid gland (goiter) and nodular changes in thyroid tissue (thyroid nodules).[1,2,3,4,5]

Intake status in Germany

The results of the second German Health Interview and Examination Survey for Children and Adolescents “KiGGS Wave 2”, conducted by the Robert Koch Institute (RKI) between 2014 and 2017, clearly show that iodine intake in Germany is insufficient and has been decreasing for the past years. According to the survey, the average iodine concentration in the urine of the 3,327 children and adolescents examined, all between 3 and 17 years of age, was 88.8 micrograms (µg) per litre, which is below the 100 micrograms per litre limit defined by the World Health Organisation (WHO). Compared to the first KiGGS survey, conducted between 2003 and 2006, the average daily intake calculated from the measurement data has decreased by 13 percent from 95 micrograms to 83 micrograms.[6] This means that more children today are at significant risk of iodine deficiency, currently 43.6 % of children and adolescents are not getting enough iodine to meet their estimated average requirement (EAR).[7] The German Nutrition Society (DGE) recommends a daily intake of 100-200 micrograms depending on the age group.[8] Similar to the iodine monitoring of the second KIGGS survey “KiGGS Wave 2”, a long-term analysis completed in 2019 with 6 to 12-year-old schoolchildren (part of the Dortmund DONALD study) also revealed a significant decline in iodine intake.[9]

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The German Health Interview and Examination Survey for Adults (DEGS), conducted between 2008 and 2011 with 6,978 participants, found that significant parts of the population are not getting adequate amounts of iodine. In the survey, the average iodine concentration in the urine was 54 micrograms per litre for women and 69 micrograms per litre for men. The estimated daily iodine intake was 125 micrograms for women and 126 micrograms for men. Hence, over 30 % of the German population and, more specifically, almost 45 percent of young women of childbearing age do not reach their estimated average requirement for their age group and are at clear risk of iodine deficiency.[10,11,12] Pregnant and lactating women in particular are at higher risk of deficiency due to the increased iodine requirement and, thus, so are their children. Other risk groups for iodine deficiency include, for example, vegetarians, vegans and people with allergies or intolerance to dairy products, fish or eggs as well as people who only consume these food groups in small amounts.

Obstacles to adequate iodine intake

The German Nutrition Society recommends a daily iodine intake depending on age group of between 90 and 150 micrograms for children and 150 micrograms for adolescents and adults. To ensure sufficient iodine intake for both mother and child, 220 micrograms are recommended during pregnancy and 230 micrograms during lactation. The recommended daily intake for infants 0-12 months old, 80 micrograms.[8]

Seafood such as saltwater fish, shellfish and seaweed are natural sources of iodine. However, iodised salt and the food products produced with iodised salt and, thanks to the iodination of animal feed, milk and dairy products and chicken eggs also contribute significantly to iodine intake.[1,13] According to the WHO, alongside an iodine-rich diet, universal salt iodisation is the best strategy for providing iodine. However, Germany is still far from such universal salt iodisation. In fact, although 80 % of households use iodised salt for cooking and seasoning, 80 to 90 % of their daily salt intake does not come from their own kitchens, but from industrial or artisan food products. Less than 30 % of this food contains iodised salt, as demonstrated by a representative market survey conducted in 2019 by the University of Gießen on behalf of the Federal Ministry of Food and Agriculture.[14,15,16] Biomarker-based examinations of the iodine and sodium concentrations in the urine samples of the DEGS survey and the second KiGGS survey “KiGGS Wave 2” by the RKI and the University of Bonn confirm that the proportion of iodised salt in the total salt intake is only about 30 %.[9,14,16]

The reasons for the low use of iodised salt in the food industry and in artisan foodstuffs include cost pressure, a low level of awareness among the population, the labelling of iodised salt as a compound ingredient and different legal frameworks within the European Union, such as the heterogeneous approval of various iodine compounds, the obligatory or voluntary use of iodised salt in the food industry and different rules on maximum quantities. Furthermore, although animal feed is iodised in EU member states within the framework of the applicable European feed legislation with clearly defined maximum quantities, no minimum quantities are explicitly specified so there are significant fluctuations in the extent of animal feed iodination. All this leads to country-specific differences in the input of iodine into the human food chain and ultimately a heterogeneous iodine intake across all EU citizens.[17,18,19]

Urgent need for action

These developments have made Germany an iodine-deficient area again. Hence the Jodmangel e.V. working group expressly welcomes the efforts of the Federal Ministry of Food and Agriculture to increase the iodisation of salt from the current level of 15-25 milligrams per kilogram of common salt to 20-30 milligrams per kilogram. This would correspond to a future iodine intake of 25 micrograms per gram of salt (currently it is 20 micrograms). However, this could and should only be a first step towards adequate iodine intake! It is at least equally important to improve iodine intake via salt from processed foods too – especially against the background of current nutritional trends such as increased eating out and a higher demand for ready-made and convenience products. This requires the industrial and artisan food industries to better exploit the existing legal possibilities for using iodised salt. In addition, politically supported educational work should also help remove manufacturers' reservations regarding iodised salt. Furthermore, there is an urgent need to rectify any trading disadvantages. In Germany, this could be achieved through concerted measures to promote the acceptance of iodised salt among the population and to reduce unfounded fears of forced or over-iodination. For international trade, it is important to create uniform legal bases – especially EU-wide regulation of maximum and minimum quantities for iodine.

For adequate and sufficient iodine intake and effective iodine-deficiency prevention, the Jodmangel e.V. working group demands:

- Initiation, intensification and promotion of sustainable, long-term educational work on the importance of the trace element iodine and the need for an iodine-deficiency prevention – especially for women of childbearing age and for pregnant and lactating women.
- Health policy strategies to ensure adequate iodine intake at population level on a sustainable basis
- Universal salt iodisation as recommended by the WHO according to the principal: “If salt, then iodised salt”
- Definition of uniform maximum and minimum quantities within the European Union according to the EU Fortification Regulation (EC no. 1925/2006)
- Harmonisation of food regulations
- Development of uniform surveillance systems and iodine monitoring, including continuous monitoring of thyroid disorder incidence rates
- Removal of existing trade barriers in the European Single Market
- Review of the obligation to declare iodised salt as a compound ingredient

With its interdisciplinary, scientific advisory board, the Arbeitskreis Jodmangel e.V. (AKJ) working group has been committed to fighting iodine deficiency and improving iodine intake in Germany as well as promoting intensive educational work and a greater awareness of thyroid health since 1984.

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Official supporters of the position paper:

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As of February 2026