



Iodized salt use in packaged food

An estimation based on the German product monitoring

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Abstract

Due to the declining iodine supply in Germany, efforts are being made to increase the use of iodized salt, e. g. in packaged food. Based on data from the national product monitoring of packaged food of the Max Rubner-Institut (MRI), in this article the proportion of packaged food containing iodized salt is estimated for eleven product groups and each proportion is compared with a baseline survey from 2016. Across the product groups examined, the proportion of products in which iodized salt is used varies significantly and is at a low level overall. At just under 50%, sausages had the highest proportion of products containing iodized salt among the product groups surveyed. In contrast, the proportion of bread and bread rolls, which just as sausages, are an important source of salt in the diet, is considerably lower, but higher than in the baseline survey.

Keywords: iodine, salt, packaged food, product monitoring, food industry, ingredient list, National Reduction and Innovation Strategy, product groups, nutrient content

Introduction

Data on the iodine supply of the German population show that around 30% of adults and 44% of children have an iodine intake below the estimated average requirement [1–3]. To optimize the iodine supply, the use of iodized salt is recommended in private households, in out-of-home catering and in artisanal and industrial food production. As the majority of daily salt intake comes from processed foods, these products could make a decisive contribution to improving iodine intake when iodized salt is used. However, a study conducted by the University of Giessen in 2018 showed that the use of iodized salt in dairy products, baked goods, meat products and sausages varied considerably and was partly at a very low level [4]. The product monitoring of packaged food (PM) carried out as part of the German National Reduction and Innovation Strategy (NRI) allows this picture of the use of iodized salt in finished products in Germany to be updated and expanded.

In 2016, the Max Rubner-Institut (MRI) collected data on the energy and nutrient content of packaged food from 18 product groups with a total of 12,500 products as part of a baseline survey for Germany [5]. Since 2019, such surveys have been carried out annually and selected product groups have been repeatedly examined in follow-up surveys [6–9]. In addition to the energy and nutrient content, the PM also records other product information such as ingredient lists, so that conclusions can also be drawn regarding the use of iodized salt. The aim of this article is to provide an overview of the current status of the use of iodized salt in packaged food and to compare the proportion of products in which iodized salt was used with that of the baseline survey.

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Method

Definition and labelling

Iodized salt (also called iodized table salt) refers to table salt that is fortified with the trace element iodine. Internationally, potassium iodate/iodide or sodium iodate/iodide is used for iodine fortification. Currently only iodates are permitted in Germany [1]. According to current food law, iodized table salt may contain 15–25 mg iodine per kg of salt. Iodized salt is a compound ingredient for which the individual components (e.g. salt, potassium iodate) must be declared in the ingredient list. Either the individual ingredients (salt, iodine-containing additive) can be included in the ingredient list of the food product or the individual ingredients can be listed after naming the compound ingredient, e.g. "iodized table salt (table salt, potassium iodate)" [10].

Data basis

The estimation presented here is based on data from the PM for the years 2016 and 2019–2022 [5–9]. Data on pre-packaged products available in the German food retail and provided with a Global Trade Item Number (GTIN) were collected. The data collection was primarily conducted via manufacturer websites. Baseline and follow-up surveys of the PM enable to depict the use of iodized salt over time. For the detailed methodology of the PM, see [11].

Selection of the product groups examined

The product groups considered are those that represent significant sources of salt intake and for which the salt content was presented in the annual PM reports (♦ Table 1; detailed descriptions of the product groups can be found in the respective reports [5–9]).

Data evaluation

As ingredient lists were not always available, e.g. due to incomplete information on the manufacturers' websites, in a first step, the proportion of products for which the ingredient list was available was determined for the product groups under consideration (♦ Table 1).

For the products with ingredient lists it was then checked for how many products salt or fleur de sel were named in the ingredient list, as statements on the use of iodized salt can only be made for this sub-sample (♦ Table 2). This also includes terms such as table salt, cooking salt, sea salt, etc.

For products for which salt was listed in the ingredient list (see column C in ♦ Table 2), a keyword search in German was carried out in the ingredient lists for the following translated terms:

- potassium iodate
- potassium iodide
- sodium iodate
- sodium iodide
- iodized
- iodized salt

¹ The 13-digit GTIN, which is usually positioned below the barcode, identifies articles, products and product variants worldwide without any overlaps. Using the GTIN as an access key to product information stored in databases, it is possible to gather product data such as designation, weight, container size or product group.

| Product group | Survey year (1 st follow-up survey)* | Description |
|-----------------------------------|---|--|
| Frozen pizza | 2019 | name-giving main topping with tomato sauce and cheese, tarte flambée |
| Bread and bread rolls | 2020 | wheat, spelt and rye bread and bread rolls, toast and toast rolls, crispbread and other bread and bread rolls such as multigrain bread |
| Sausages | 2020 | a selection of the range of sausages and other meat preparations (due to the large number and variety on the German market), e. g. lyoner, liver sausage and schnitzel |
| Meat preparations | 2020 | |
| Plant-based meat alternatives | 2021 | product name or presentation is based on customary designations of foods with animal ingredients, e.g. spreadable sausage substitute, grain-based burger patty |
| Cold sauces | 2021 | ketchup and its liquid substitutes such as barbecue sauces |
| Pasta sauces | 2021 | sauces that are usually consumed with pasta and declared accordingly, e.g. Bolognese |
| Frozen complete convenience meals | 2021 | savoury dishes consisting of several components, ready seasoned and only to be heated before consumption without the addition of further ingredients |
| Soups | 2022 | thin or creamy preparations, dry and wet products |
| Stews | 2022 | mainly bound, thickened soups with mostly 30–50% solid ingredients, declared as stew, pot or terrine or classified as stews based on portion size and traditional classification |
| Instant soups and instant meals | 2022 | dry products that are only prepared by adding hot water in the packaging, in a cup or similar before consumption |

Tab. 1: Description of the analyzed product groups from product monitoring

*The baseline survey was carried out for all product groups mentioned in 2016.



| Product group | Year of survey | A Products surveyed | B of which products with available ingredient list [number of products / % of A] | C of which salt listed in ingredient list [number of products % of B] |
|-----------------------------------|----------------|------------------------|---|--|
| Frozen pizza | 2019 | 394 | 310 (78.7 %) | 310 (100.0 %) |
| | 2016 | 285 | 208 (73.0 %) | 208 (100.0 %) |
| Bread and bread rolls | 2020 | 913 | 904 (99.0 %) | 899 (99.4 %) |
| | 2016 | 293 | 254 (86.7 %) | 253 (99.6 %) |
| Sausages | 2020 | 2220 | 2052 (92.4 %) | 2052 (100.0 %) |
| | 2016 | 342 | 229 (67.0 %) | 228 (99.6 %) |
| Meat preparations | 2020 | 411 | 399 (97.1 %) | 399 (100.0 %) |
| | 2016 | 141 | 110 (78.0 %) | 110 (100.0 %) |
| Plant based alternatives | 2021 | 713 | 706 (99.0 %) | 699 (99.0 %) |
| | 2016 | 130 | 118 (90.8 %) | 117 (99.2 %) |
| Cold sauces | 2021 | 554 | 551 (99.5 %) | 548 (99.5 %) |
| | 2016 | 165 | 155 (93.9 %) | 154 (99.4 %) |
| Pasta sauces | 2021 | 328 | 302 (92.1 %) | 299 (99.0 %) |
| | 2016 | 76 | 68 (89.5 %) | 68 (100.0 %) |
| Frozen complete convenience meals | 2021 | 785 | 785 (100.0 %) | 783 (99.7 %) |
| | 2016 | 290 | 174 (60.0 %) | 173 (99.4 %) |
| Soups | 2022 | 606 | 580 (95.7 %) | 578 (99.7 %) |
| | 2016 | 203 | 167 (82.3 %) | 166 (99.4 %) |
| Stews | 2022 | 395 | 332 (84.1 %) | 332 (100.0 %) |
| | 2016 | 162 | 76 (46.9 %) | 76 (100.0 %) |
| Instant soups and instant meals | 2022 | 235 | 178 (75.7 %) | 178 (100.0 %) |
| | 2016 | 150 | 95 (63.3 %) | 95 (100.0 %) |

Tab. 2: Survey years with the estimated number of products for each product group

A product was considered as "containing iodized salt" if salt was listed in the ingredient list and one of the above terms was mentioned at least once in the ingredient list. On this basis, the absolute and relative proportion of products containing iodized salt was calculated per product group.

Results and discussion

Use of iodized salt (2019–2022)

The proportion of products containing iodized salt varied considerably depending on the product group and ranged from 2% for cold sauces to 48% for sausages (♦ Figure 1). Sausages, just as bread and bread rolls, are an important source of salt in the diet [12]. However, the observed proportion of products containing iodized salt was significantly lower in bread and bread rolls than in sausages. Comparable results were also found in a survey conducted by the University of Giessen in 2018 [4].

By comparison, for frozen complete convenience meals the proportion of products containing iodized salt was comparatively high at 36%. Here it should be noted that in some products iodized salt was only used as an ingredient in one sub-component, while non-iodized table salt was used for other components. Also, in other product groups, e.g. sausages, different seasoning mixtures

may be used simultaneously, and thus iodized and non-iodized table salt may be used within one product. In plant-based meat alternatives as well as in cold sauces, the proportion of products containing iodized salt was low at less than 10%. A similarly low proportion was also found in a non-representative study from Switzerland [13]. At the same time, there is an increased risk of iodine deficiency, particularly in case of vegan diets [14, 15].

Changes between baseline and follow-up surveys

The proportion of products in which iodized salt was used also varied considerably in the baseline survey of the PM, with values ranging from 5% (plant-based meat alternatives, bread and bread rolls) to 70% (soups). For product groups where a decrease was observed, e.g. soups and instant soups and instant meals, the decrease was particularly pronounced at 42% and 26% respectively (♦ Figure 1). Increasing amounts were particularly noticeable for frozen complete convenience meals and bread. For plant-based meat alternatives and

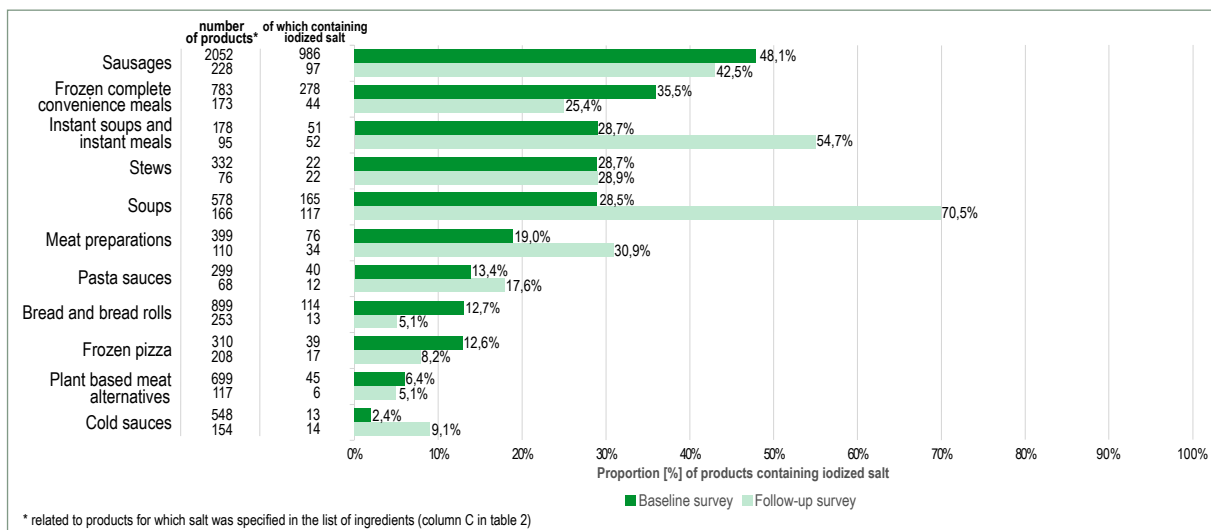


Fig. 1: Use of iodized salt in the product groups examined (in descending order according to proportion in the respective follow-up survey)

pasta sauces, the differences were < 4%; there was no change in the proportion for stews. However, when assessing the changes, the methodological differences between the baseline survey and the follow-up surveys must be considered. For example, the sample size of the baseline survey was significantly smaller, as it was used to obtain an initial overview of frequently purchased packaged foods on the market.

Conclusion & outlook

In almost all product groups examined, the proportion of products containing iodized salt was low at less than 30%. In order to increase the use of iodized salt, continuous education of the manufacturing companies and the population is required. In addition, companies should be supported in switching to the use of iodized salt and possible barriers to the use of iodized salt should be discussed and removed in a dialogical process.

The third follow-up survey in the PM, which is already planned for particularly relevant product groups such as bread and bread rolls, will show how the proportion of the use of iodized salt is developing. This will also include a separate evaluation of the use of iodized salt in organic products compared to non-organic products. Ideally, this could also be linked to the planned national nutrition monitoring, which will not only examine the iodine supply in the population, but also the use of iodized salt in households.

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Conflict of Interest

The authors declare no conflict of interest.

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