

THE SALT CONTENT OF PACKAGED PRE-SLICED BREAD



March 2023

About Action on Salt

Action on Salt is a group concerned with salt and its effects on health, supported by 22 expert scientific members. Action on Salt is successfully working to reach a consensus with the food industry and Government over the harmful effects of a high salt diet and bring about a reduction in the amount of salt in processed foods as well as salt added to cooking, and at the table.

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- All manufacturers for their feedback and engagement



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BACKGROUND

Decades of consistent, high-quality research has linked excessive salt intake to raised blood pressure, [1] a major risk factor for heart attacks and stroke and the leading causes of death and disability worldwide [2]. The recommended salt intake in the UK is less than 6g a day for an adult, however, the latest figures show we are eating 40% more than this (8.4g/day). For every 1g reduction in population salt intake, it's thought that more than 4,000 premature deaths could be prevented each year, with annual health savings to the NHS at £288million [3]. Reducing salt intake has therefore been identified as one of the most cost-effective measures that any country should take to improve population health outcomes.

In the UK the majority of our salt is already added to the foods we buy [4], therefore a strong focus on reformulation by the food industry is needed if we are to improve population health. Bread for example, is a staple food within the UK, with over 60 loaves of bread brought per person per year [5]. Bread alone accounts for 14% of our daily intake of salt, making it the largest contributor to salt in our diet [6].

Voluntary salt reduction targets have been in place since 2006 for retailers, manufacturers, and the out of home sector to work towards, covering over 80 categories of food. Various iterations have since been published to encourage companies to gradually reduce the salt content of the food they produce. Since the start of the UK salt reduction programme, salt in bread has seen significant reductions, by as much as 30%, with more stringent targets set in September 2020, to be achieved by 2024 [7,8].

	Salt Target 2024 (Current)	Salt Target 2017	Salt Target 2012	Salt Target 2010
2.1 Bread and Rolls	0.85g/100g (average) 1.01g/100g (maximum)	0.9g/100g (average) 1.13g/100g (maximum)	1.0g salt (average)	1.1g/100g (average)

The salt content of pre-sliced bread has not been reviewed by Action on Salt since 2011. The aim of this report is to assess manufacture and retailer progress in meeting the 2024 salt reduction targets, and highlight successful case studies of where salt content has been reduced successfully.

METHOD

Data Collection

Packaged loaves of pre-sliced bread available in retail outlets across the UK were surveyed. Data was collected from large supermarkets that have a wide selection of bread following strict inclusion and exclusion criteria. Ten major retailers were visited between January and March 2023 (Aldi, Asda, Iceland, Lidl, Marks & Spencer, Morrisons, Sainsbury's, Tesco, The Co-operative and Waitrose). Nutrition information and ingredients was obtained directly from product packaging using the FoodSwitch Data Collector App [9]. Where two sizes of the same product were available, the standard 800g loaves were used. All data was shared with manufacturers and retailers for verification.

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none">• Packaged pre-sliced bread• All available sized loaves and slices (medium, thick etc)	<ul style="list-style-type: none">• Fresh Bread• Bread with additions such as olives or sun-dried• Other forms of bread such as pitta, naan, ciabatta

Data Analysis

The average salt content per 100g and per slice was analysed. Breads were split across 7 categories to make comparisons across the similar types of bread and brands.

Industry progress towards achieving the 2024 maximum salt reduction target of breads and rolls was measured [6].

Where possible, salt content of bread was compared to earlier research conducted in 2011 [10].

RESULTS

Key Findings:

- Average salt content in pre-sliced bread was 0.9g/100g and 0.39g/slice
- There is a 3-fold difference in salt content across all packaged sliced bread, ranging from 0.51-1.48g salt/100g
- Three in four sliced breads contain at least as much salt per slice as a packet of ready salted crisps [11]
- 11% of surveyed products exceed the maximum salt reduction target for breads and rolls
- Since 2011, salt content in pre-sliced bread has reduced by approximately 8%, from 0.98g/100g to 0.90g/100g

Salt Levels in Packaged Sliced Bread

A total of 242 products were included in this survey from 28 companies (10 retailers and 18 manufacturers). At the time of collection, Hovis (n=22) and Marks & Spencer (n=23) had the highest proportion of sliced breads, in comparison to The Heart of Nature, LivLife, Sunrise Bakery, Black Sheep and Crosta & Mollica which each only had 1 product meeting the inclusion criteria.

The average salt content of all pre-sliced bread was 0.9g/100g, and ranged from 0.51-1.48g/100g, a 3-fold difference. Retailer own brand products dominated the in-store bread market, with a lower salt content on average in comparison to manufacturers (Appendix I). On average sourdough sliced bread contained the most salt with 0.96g/100g in comparison to seeded bread and multi-grain/granary with 0.86g/100g (Table 2).

Table 2: Average salt content of pre-sliced bread, split by category

Bread Category	Total Number of Products	Average Salt Content g/100g (range)
All	242	0.9 (0.51-1.48)
Brand	89	0.94 (0.68 - 1.48)
Retailer	153	0.87 (0.51 - 1.2)
Sourdough	15	0.96 (0.78 - 1.3)
Rye Bread	6	0.92 (0.51 - 1.15)
White	80	0.92 (0.63 - 1.48)
Both	13	0.89 (0.79 - 0.96)
Wholemeal	53	0.89 (0.59 - 1.03)
Multi-grain/Granary	23	0.86 (0.53 - 1.28)
Seeded	52	0.86 (0.67 - 1.24)

Salt Targets

Pre-sliced breads fall under the salt target '2.1 Bread and Rolls', where the maximum salt target is 1.01g/100g and the sales weighted average target is 0.85g/100g. This category includes all breads and rolls, of which pre-sliced bread is just one component.

Out of 242 products included in the survey, 11% (26 products) had a salt content greater than the maximum target. Promisingly, approximately two thirds of companies [12] produced breads which all fall below the 2024 maximum target; Table 4 lists only those companies with products exceeding the maximum target.

Table 4. Proportion of brands whole packaged sliced breads exceed the maximum salt target for bread and rolls

Brand	Total Number of Products Surveyed	Proportion Exceeding Maximum Salt Target (number of products exceeding target)
Crosta & Mollica	1	100% (1)
Livlife	1	100% (1)
Schneider Brot	2	50% (1)
The Polish Bakery	5	40% (2)
Bertinet	3	33% (1)
Waitrose	20	29% (6)
Hovis	22	27% (6)
Marks & Spencer	23	26% (6)
Aldi	19	11% (2)

No comment can be made on industry compliance towards the sales-weighted average due to restrictions in data access.

Salt Content of Bread from Previous Research

The salt content of pre-sliced bread from 2011 was obtained from previous literature [11], which found the average salt content to be 0.98g/100g. Since then, pre-sliced bread has seen an overall reduction in salt content by 8%, to 0.9g/100g.

Within the data, there were 47 products from 11 different companies (6 retailers and 5 manufacturers) that were surveyed across both years (Table 5). The average salt level for these 47 products was 1.01g/100g in 2011, and 0.92g/100g in 2023. This represents a reduction of 9% from 2011 to 2023. Of the pre-sliced bread surveyed in both years, 1 in 2 products (53%) achieved a reduction in salt content, 34% saw no change and 13% increased in salt.

Table 5: Average salt content (g/100g) of pre-sliced bread split by brand surveyed in 2011 and 2023

Brand	Number of products	Average salt g/100g in 2011	Average salt g/100g in 2023
Hovis	11	1.03	0.93
Kingsmill	1	0.88	0.88
Marks & Spencer	8	0.92	0.95
Morrisons	4	0.95	0.84
Sainsbury's	5	0.87	0.88
Schneider Brot	2	1.46	1.08
Tesco	2	0.90	0.88
The Co-operative	1	1.00	0.86
Vogels	2	1.31	0.77
Waitrose	6	0.99	0.91
Warburtons	5	1.08	0.97

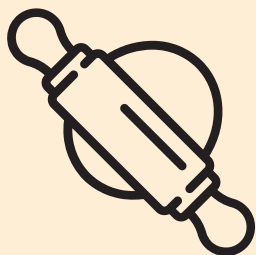
The bread with the greatest reduction in salt was seen in Vogels 'Glorious Original Mixed Grain Bread' with a 50% reduction from 1.38g/100g to 0.69g/100g (Table 6). Contrastingly, the bread with the biggest reported increase in salt was Sainsbury's Medium Wholemeal with a 19% increase from 0.74g/100g to 0.88g/100g.

Table 6: Examples of pre-sliced breads with notable reductions in salt between 2011 and 2023

Brand	Product Name	2011 - Salt Per 100g (g)	2023 - Salt per 100g (g)	Percentage Difference
Vogels	Glorious Original Mixed Grain Bread	1.38	0.69	-50%
Vogels	Sensational Soya & Linseed Bread	1.25	0.85	-32%
Schneider Brot	Organic Sunflower Seed Bread 500g	1.42	1	-30%

THE ROLE OF SALT IN SLICED BREAD

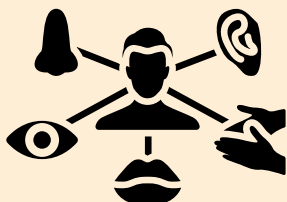
The role of salt in bread is multi-factorial [13]. In summary, salt is used in sliced bread for three main reasons:



Dough Formation: Salt tightens the gluten structure so the product can hold carbon dioxide which is then released through fermentation. Without the addition of salt, the dough forms a sticky texture and has little resistance to extension and results in a lack of volume [14,15]



Shelf Life: Salt has hygroscopic properties, where it dissolves in the water they absorb. Therefore, salt is able to reduce the water activity in bread and is less susceptible to microbiological activities. This improves the preservation and increases the shelf life of the product [13]



Sensory: The presence of salt influences the taste and flavour of the sliced bread

Whilst there is some requirement of salt in sliced bread, as evident in this report there is scope for further reductions due to the existence of lower salt products available in supermarkets.

“The Real Bread Campaign has always encouraged all Real Bread bakers, as well as industrial loaf manufacturers, to ensure that salt levels do not exceed the target maximum. While it’s concerning that salt levels in some industrial loaf products are still way above the target set back in 2006, let alone the current one, it’s good to see that other manufacturers have made progress.”



SALT REDUCTION SOLUTIONS

There are several available strategies available to manufacturers to produce pre-sliced packaged breads with less salt. These vary from gradual reductions in salt added during the production process, or using reduced sodium salt replacers.

Despite salt replacers being a meaningful solution to reduce salt, no pre-sliced breads surveyed in this report declared its use within the ingredients list.

Healy Group with Saltwell®

Healy Group is a solutions-driven ingredients distributor with the principal focus of supporting food innovation. Our leading ingredient for salt reduction, Saltwell, can deliver an immediate and straight forward solution with no changes to labelling, processes or organoleptic properties.

Saltwell is a natural sea salt from the Atacama Desert in Chile, which unique to that source has 35% less sodium than regular PDV or sea salts whilst still maintaining flavour, functionality, safety and salt labelling. As a result, it can be used in simple weight for weight switch with regular salt providing instant reduction results with no changes to production processes and ultimately consumer perception in the finished product.

Saltwell has been tested thoroughly and is commercially used in bakeries across Europe and North America already. Please see case studies for different types/styles of bread below.

Classic White Sliced Bread, Wholemeal Sliced Bread, Bread Rolls, Baguettes and Pizza Bases

Commercial bakery tests on dough production, fermentation, texture, taste show no differences when regular salt is replaced with Saltwell.

Mediterranean Italian Loaf

The natural low sodium sea salt (Saltwell) has made it possible to obtain breads which are low in sodium, and the breads showed good taste and flavour. The studies and commercial applications show that replacing traditional sea salt with Saltwell® is a possible strategy for reducing sodium intake while maintaining the quality and sensorial characteristics of the bread.

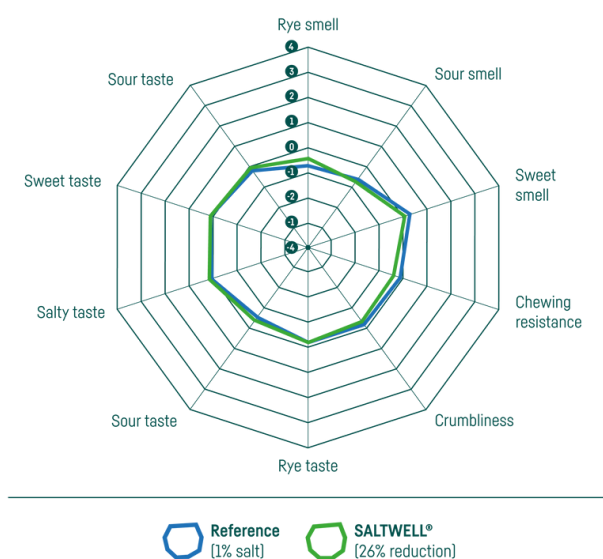
- No significant differences in the specific volume and bread yield;
- Sensory data shows it does not influence the attributes of softness;
- These results encourage the opportunity to produce low-sodium or very low-sodium bread in accordance with the guidelines for a healthy diet.

Rye Loaf

Research study including sensory analysis and consumer test shows no differences when regular salt is replaced with Saltwell.

- Sensory analysis: no significant differences in any of the attributes (See Figure 1).
- Consumer test: no significant differences in any of the attributes (appearance, taste, texture, overall liking).

Figure 1. Sensory analysis of rye loaf using Saltwell



For more information contact Samuel Bambrough at SBambrough@healy-group.com

SmartSalt®

Mineral salt replacers such as Smart Salt® that include mixtures of potassium and magnesium chloride have been shown to be very effective at reducing sodium levels beyond the current 2024 targets in bread whilst maintaining acceptable flavour and technical feasibility in plant [16], [17], [18]. Smart Salt® has also shown improvements in mould free shelf-life and higher process lethality against *Bacillus spp*, including *B.cereus*, compared to salt and other salt replacers at 40-50% sodium reduction [19], [20]. This evidence indicates that there are further potential sodium reduction possibilities in bread without any compromise in taste, shelf-life or safety.

For more information contact Dr Helen Mitchell at helen.mitchell@smartsalt.fi

LoSalt

Caroline Klinge, Director of Klinge Chemicals Ltd who produces LoSalt, confirmed the use of potassium chloride can and has been used for the reduction of total sodium concentration of salt.

"I am always astounded why there is such variance in salt content of branded bread products...we know that reformulating with potassium-based salt alternatives such as LoSalt® is successful as such products have been on the market place. The only reason why these products are no longer on the market is a decision made by the manufacturers themselves."

For more information contact Caroline Klinge at cklinge@klinge-chemicals.co.uk

MicroSalt

MicroSalt® is dedicated to helping the world's population reduce cardiovascular disease by innovating food technology solutions. Their patented MicroSalt® product delivers natural salt with 50% less sodium and can be used by consumers and food companies who wish to decrease the amount of sodium in their food. Each MicroSalt® product helps consumers achieve this goal without sacrificing flavour. MicroSalt®'s patented technology which is able to reduce 40% of sodium used in bread production while NOT compromising taste.

Gregg Brinkmam, Corp. Ex. Chef, HennyPenny.com said *"While testing MicroSalt® in several products, including breadings, marinates, and baked goods, the end products have an equal or better flavor and look. While specifically utilizing MicroSalt in bread, MicroSalt® has allowed me to reduce the sodium by 40% without compromising on quality or taste "*

For more information contact Carolina Berardi at cberardi@microsaltinc.com



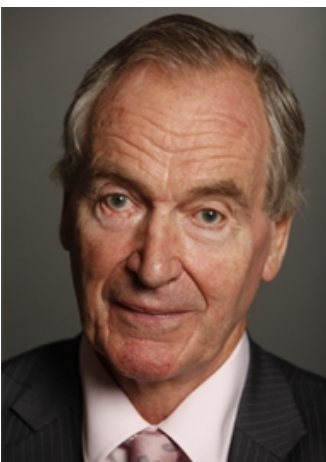
Sheena Bhageerutty ANutr, Assistant Nutritionist at Action on Salt

"Bread is the single biggest contributor of salt to our diets and therefore even the smallest of reductions in salt would go a long way for our health. This is why we urgently need companies to double down their efforts to reduce salt further and make salt reduction a priority."



Sonia Pombo, RNutr, Campaign Lead at Action on Salt

"Our survey clearly demonstrates the huge variation in the salt content of bread and shows how easy it would be for those companies lagging behind to immediately reformulate. The time to obfuscate is over – action is needed now. The Government can no longer sit on their hands and do nothing when so many thousands of lives could be saved."



Professor Graham MacGregor, Professor of Cardiovascular Medicine at Queen Mary University of London and Chairman of Action on Sugar

"Reducing salt is the most cost-effective measure to lower blood pressure and reduce the number of people dying and suffering from strokes and heart disease. It's therefore a disgrace that food companies continue to fill our food with so much unnecessary salt, as shown here in bread. For too long the food industry have been in charge of public health, at our expense; it's time for the Government to stop letting people die needlessly."

ENGAGING WITH INDUSTRY

We contacted all 28 companies included in this survey to discuss any successes, challenges and recent reformulation plans within this category.

We received written correspondence from 10 companies: Asda, Aldi, Dr Schär, Jason's Sourdough, Kingsmill, Lidl, Marks & Spencer, Sainsbury's, Tesco and The Co-operative. We also met with Genius Food prior to the release of the report.

While we have been asked to keep most details confidential, we can share some key themes from our correspondence:

- **Most companies were engaged with salt reduction for this category of food.**
- **Whilst acknowledging the importance of salt reduction on public health, any reformulation efforts will have an impact on microbial growth and consequently tackling food waste.**
- **There was no reported use of salt replacers in pre-sliced bread. Salt replacers may be used as an alternative to help with the flavour aspect in bread but it can be challenging when considering the functionality and additional cost.**
- **If bread products are sold outside the UK, it can be challenging to reduce the salt content to meet the preferences and guidelines of consumers in other countries.**
- **Some companies are already achieving the sales weighted average target for bread and rolls, or are set to achieve them by 2024.**

We received additional comments from various companies:



"M&S makes healthy eating easier through clear on-pack labelling, including our Eat Well flower to signpost healthy choices. We naturally enrich all our pre-packaged sliced bread with vitamin D and fibre, and whilst salt is essential for the fermentation process, texture and shelf life of our bread, we are actively reducing salt to meet PHE 2024 salt targets. This salt reduction activity is part of our reformulation programme to continually improve the nutritional profile of all our foods and we are committed to delivering further salt reductions across our ranges."

"We have been working for many years on gradual salt reduction. Since 2004, we have reduced levels by 25% and by adopting a phased reduction, consumers have been able to get used to the change in flavour without rejecting our products. However there remains the issue that salt does impact quality and affects many aspects of bread beyond flavour. It plays a major role in dough formation, fermentation rate, crumb structure and shelf life. All of these aspects contribute to the consumers perception of product quality. We remain committed to ongoing recipe optimisation and have learnt a great deal about reformulation over the past two decades.

As levels of salt have been reduced, we have had to find ways to compensate for the changes in processing and in the quality of the finished product. We also saw a significant reduction in shelf life when we initially moved to the 2012 targets and, while we have now overcome this challenge, salt remains an important barrier to microbial growth in bread, and consequently plays an important role in reducing food waste, which is a significant challenge for the food sector and bakery products in particular."





“Dr Schär is a global producer of specialist gluten-free foods. We are dedicated to the production of gluten-free foods that contain the least amount of artificial ingredients possible, this includes the avoidance of artificial preservatives in all of our products. Alongside its many technological, sensory and taste applications, we use salt as a natural preservative.

Developing shared-recipe products that meet the nutritional requirements set by governments in over 20 countries, whilst respecting the specific consumer taste and ingredient preferences in those countries, is extremely challenging. Nevertheless, over the last 15 years, we have succeeded in reducing the salt content of our sliced bread products by over 57%, in step-by-step approach so as to ensure the quality, safety and acceptability of our products.

Since our inception, over 40 years ago, Dr Schär has remained entirely committed to the health and wellbeing of our consumers. There are many facets to this commitment, including our unrivalled investment in medical research concerning gluten-related disorders, our dedication to advancements in gluten-free baking technology, alongside our fealty to continually improving the ingredient and nutritional profile of our products. In this regard, in 2021, we were proud to be the first dedicated gluten-free food manufacturer to introduce a company-wide Quality Commitment, featuring measurable targets for salt and sugar levels for all products, matching the levels set for these nutrients by Public Health England. This was made possible by the collaboration between our product development team, quality assurance colleagues and company dietitians.

The salt content of our sliced loaves (Wholesome White, Seeded and Vitality) falls below the maximum permitted 2024 PHE salt targets and, thanks to the development of new bread recipes, we anticipate that our sales weighted average (SWA) for salt will reduce to meet the Public Health England SWA target for salt by the end of 2024. This will be achieved without compromise in relation to other nutrients.”

Sainsbury's

“We are supportive of the government recommendation to reduce salt to 6g/day and are happy that 100% of our sliced bread products meet the 2024 Public Health England salt target. These targets are built into our product development process so that we benchmark nutrient levels and adjust these where needed.”

Beth Fowler, Nutrition & Health Manager at Asda

"Asda is committed to making healthy choices easy for customers and we've been working for many years to reformulate Asda products to reduce salt, sugar and calories, as well as improving the overall nutrition profile of products. We are pleased to say we've already hit the 2024 salt targets across bread and rolls, as well as increasing the number of high fibre 'Live Better' products in the range. We are committed to continuing our work on reformulation across the categories that are most important to Asda customers' diets."

"Our products were developed within the 2017 guidelines, and are all below the current maximum salt target set for 2024.

Because we use traditional methods i.e. sourdough, long fermentation and no emulsifiers our process is much,

much longer than the bread products we are likely being compared to, which likely use the Chorley Wood bread process (2 ½- 3 hours from starting the mixer to having sliced bread in a bag). Our process is more than 16 hours, in some cases more than 24.

Salt is a functional part of the dough formulation, and is required to slow fermentation down. If we make a dough without salt, the dough is very 'slack' and lacks the strength we need to create our lovely open crumb texture. It's also really difficult to handle when it's lacking strength.

Our salt levels have been determined through extensive trials, trying to balance the right degree of dough strength/stability, correct fermentation to give the right flavour and crumb texture and being easy for us to handle throughout our process.

It's always possible to review things like this and look at how we can reduce, but there are many factors to consider before we make such changes.

For comparison, if you buy a loaf of bread from a true artisan baker the salt content will be much higher – probably close to 1.5%. We're using the same processes as many of these, so when we compare where we are on salt to this type of product we're actually in a pretty good place."

RECOMMENDATIONS

Below are recommendations for the government, food industry and consumers to help reduce population salt intake and reduce salt content in bread.

Government

- Release interim report on salt targets for transparency, originally due in 2022
- Salt targets must be mandated by Government to ensure that all manufacturers and retailers meet the current and future targets
- Regular monitoring and review of the Government's salt reduction strategy is vital to ensure continued progress in salt reduction
- Develop consumer awareness campaigns to inform the public of the dangers of salt hidden within everyday food.

Food Industry

- Explore the use of reduced-sodium salts
- Meet and go beyond the 2024 maximum salt reduction target of 1.01g/100g and sales weighted average of 0.85g/100g
- Reductions in added salt are possible, as evidenced in this report. Gradual, unobtrusive reductions in salt across the whole range of food available to the public has the added benefit of not affecting sales or consumer acceptability, while still benefiting public health

Consumers

- Opt for medium sliced bread, as the thicker the slice, the more salt it contains.
- Choose low-salt fillings for your sandwiches such as chicken, tuna in spring water, and egg salad
- Choose lower salt spreads, and use salty ingredients such as yeast extract, pickles and pesto, sparingly
- Try making your own bread with little or no salt

APPENDICES

Appendix I. Average salt content of breads produced by different retailers and manufacturers, ranked from highest to lowest in salt g/100g

Brand	Number of Products	Average Salt g/100g (Range)
Crosta & Mollica	1	1.3
The Polish Bakery	5	1.08 (1-1.3)
Schneider Brot	2	1.08 (1-1.15)
Bertinet	3	1.06 (0.99-1.2)
Livlife	1	1.02
Schär UK	3	0.99 (0.97-1)
Sunrise Bakery	1	0.98
Hovis	22	0.97 (0.68-1.48)
Iceland	7	0.95 (0.9-1)
Marks & Spencer	23	0.94 (0.73-1.15)
Warburtons	21	0.93 (0.8-0.98)
Jason's	4	0.91 (0.8-0.99)
Kingsmill	10	0.9 (0.8-0.95)
Waitrose	20	0.91 (0.51-1.2)
Brace's Bakery	4	0.9 (0.89-0.92)
Black Sheep	1	0.9
The Heart of Nature	1	0.9
Lidl	9	0.89 (0.75-0.98)
Tesco	15	0.87 (0.75-1)
Sainsbury's	11	0.87 (0.68-0.99)
Aldi	19	0.86 (0.53-1.1)
Allinson	2	0.86 (0.75-0.95)
The Co-operative	12	0.82 (0.7-0.88)
Morrisons	16	0.81 (0.67-0.98)
Jackson's Bakery	4	0.81 (0.77-0.85)
ASDA	21	0.79 (0.59-0.9)
Genius	2	0.78 (0.71-0.84)
Vogel's	2	0.77 (0.69-0.85)
ALL	242	0.9 (0.51-1.48)

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