



Changes in salt levels in cooking sauces, Australia (2010-17)

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Introduction

Cardiovascular disease is the leading cause of non-communicable disease (NCD) deaths worldwide¹. Excess dietary salt intake increases blood pressure, and the risk of stroke and cardiovascular disease.² Globally, it has been estimated that more than 1.65 million cardiovascular deaths per year are attributed to excess dietary salt intake.³ Reducing salt intake is one of the most cost-effective public health interventions to reduce the global burden of non-communicable disease (NCDs); by lowering blood pressure, and thereby reducing the risk of stroke and heart disease deaths⁴. Many countries are working towards achieving the global target of a 30% relative reduction in mean population salt intake towards the World Health Organisation (WHO) <5g target⁵.

Average salt intake in Australia is 9g salt per day⁶, almost DOUBLE the WHO <5g recommendation. The Australian Federal Government has signed up to the global target to reduce population salt intake by 30% by 2025. In order to ensure we are on the right track to achieve this, The Victorian Health Promotion Foundation has established a Salt Reduction Partnership Group, including The George Institute for Global Health, The Heart Foundation, Deakin University, and the Victorian Department of Health, to review the evidence, consult with stakeholders and develop an action plan for salt reduction in Victoria⁷. The World Health Organization Collaborating Centre on Population Salt Reduction at the George Institute for Global Health in Sydney has a remit to support countries to achieve this target including developing programs of work to reduce salt levels in food.

Tips for consumers

- o The greatest reduction in average sodium content was between 2010 and 2015 (33% reduction in average sodium contents). There was no further decrease from 2015-2017 (1221 – 1313mg/100g respectively).
- o In 2017, tomato based pasta sauces had the lowest average sodium content of all pasta sauces (334mg/100g), however there is a huge range in the sodium content of these products, (8-750mg/100g), with some products containing almost 100 times more sodium than the lowest sodium product.
- o Some powdered casserole mixes contain over three times more sodium than others (2850-8700mg/100g).
- o There is currently NO salt target for powdered meal based sauces.
- o 30% more pasta sauce products met the targets in 2015 compared to 2010 (73% compared to 43%).

According to the most recent Australian Health Survey, the highest contributors of salt to the diet include bread and bread rolls (12.8%), processed meat (6.7%), ready to eat breakfast cereals (2-3%) and sauces, dips and condiments (6%).⁸ Given the frequency of consumption, as well as the contribution of salt to the diet, reformulating these foods to contain less sodium offers a good opportunity to reduce population level salt intake.

In 2009, The Australian Food and Health Dialogue (FHD) (since superseded by the new government's Healthy Food Partnership) set voluntary sodium reduction targets for 9 food categories, including simmer sauces to be achieved by the end of 2014.⁹

The aim of this study was to analyse the changes in sodium contents in cooking sauces sold in Australia in 2010, 2013, 2015 and 2017, and compare sodium contents against the Australian FHD targets.¹⁰ This was with the view to understanding the current levels of sodium levels in cooking sauces in Australia and inform direction for future reformulation efforts.

Key findings

- Overall average sodium content of cooking sauces decreased by 28% from 2010 (1815mg/100g) to 2017 (1313mg/100g)
 - The greatest reduction in average sodium content was between 2010 and 2015 (33% reduction in average sodium contents). There was no further decrease from 2015-2017 (1221 – 1313mg/100g respectively).
- In 2017, about 70% of products were covered by the FHD targets, of which 55% of products met the targets.
- The average sodium content of ambient meal based sauces increased by 29% from 542mg/100g in 2010 to 696mg/100g in 2015.
- Black bean /Asian sauces had the highest average sodium content in ambient meal based sauces (947mg sodium/100g) in 2017 with Ayam's Pad Thai Stir Fry sauce containing 2.9g of salt per serve. However there was a huge range in sodium contents from 270-2250mg/100g – with some products containing more than 10 times the amount of sodium compared to others.
- Average sodium in ambient pasta sauces decreased by 27% from 2010 (472mg/100g) to 2017 (342mg/100g), meeting the FHD (420mg/100g target). However between 2015 and 2017 there was no further significant decrease (376 and 342mg/100g respectively).
- Within ambient pasta sauces, the categories with the greatest reductions included cream based and tomato based pasta sauces - reduced by 27% and 28% respectively from 2010-2017
 - In 2017, tomato based pasta sauces had the lowest average sodium content of all pasta sauces (334mg/100g), however there is a huge range in the sodium content of these products, (8-750mg/100g), with some products containing almost 100 times more sodium than the lowest sodium product.
- Powder based meal sauces had the highest mean sodium content (5011mg/100g) amongst meal based sauces in 2017. McCormick's Slow Cookers Mild Chicken Curry sauce contains 8700g/100g for example. Whilst it is recognised that these products are diluted with water, there is a huge range of sodium content from 715-8950mg/100g, which demonstrates that manufacturers are able to make these products with far less sodium.
 - For example: some powdered casserole mixes contain over three times more sodium than others (2850-8700mg/100g).

- There is currently NO salt target for powdered meal based sauces.

- Curry pastes also contain high levels of sodium – average sodium content was 2000mg/100g in 2017 with some products containing 20 times more sodium than others (range: 251-4530mg/100g).
- Since 2010, there has been an 18% increase in the proportion of products meeting the FHD targets (from 37% in 2010 to 55% in 2017)
- The proportion of pasta sauce and other simmer sauce products meeting the FHD targets increased from 2010 to 2015, however there was no further increase from 2015 to 2017.
 - For example 30% more pasta sauce products met the targets in 2015 compared to 2010 (73% compared to 43%).

Conclusion

Overall the average sodium content of cooking sauces decreased by 28% from 2010-2017. In addition, 55% of products, with FHD targets, now meet the targets compared to 37% in 2010. However, there are some categories, including where FHD targets were not applicable, where average sodium levels have increased. The huge range in sodium content amongst similar products highlights the potential for further reductions to be made by food manufacturers. The largest increase in the proportion of products meeting the targets occurred between 2010 and 2015, which suggests that the setting of targets may be effective in motivating the food industry to take action. However currently, no further targets have been set. This highlights the need for comprehensive targets across the entire product category, with continuous, and specific time frames, and transparent monitoring systems to ensure compliance by the food industry.

Limitations

The products captured in the packaged food composition database do not necessarily represent a complete coverage of the product supply within Australia, but rather those captured at specific time points during surveys, and limited to major food retailers.

About The George Institute's Food Policy Division

The George Institute's Food Policy group works in Australia and internationally to reduce rates of death and disease caused by diets high in salt, saturated fat and sugar or excess energy, by undertaking research and advocating for a healthier food environment. The George Institute Food Policy group's main focuses are food reformulation, monitoring changes in the food supply, and developing and testing innovative approaches to encourage consumers towards better food choices.

The George Institute for Global Health

The George Institute for Global Health is improving the lives of millions of people worldwide through innovative health research. Working across a broad health landscape, the Institute conducts clinical, population and health system research aimed at changing health practice and policy worldwide. The Institute has a global network of medical and health experts working together to address the leading causes of death and disability worldwide. Established in Australia and affiliated with The University of Sydney, the Institute today also has offices in China, India and the United Kingdom, and is also affiliated with Peking University Health Science Centre, the University of Hyderabad and the University of Oxford.

The George Institute prioritises clinical and population health research that produces outcomes that are easily translated into practice, and effect real change within a short period of time to health policy and practice. The Institute has been ranked among the top 10 global institutes for impact for the last several years, and its research has resulted in changes to medical guidelines and ways of thinking about some of the most common medical treatments around the world. Examples include developing a new treatment for stroke, showing that blood pressure lowering reduces the risk of cardiovascular disease in people with diabetes, and providing safer fluid options for patients in intensive care. Developing better methods for delivering health care are a priority for the Institute. Follow us on Facebook at and on Twitter @georgeinstitute

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Table 1: Mean, median, range of sodium in cooking sauces from 2010 to 2017

| FOOD CATEGORIES | 2010 SODIUM LEVELS (mg/100g) | | | | 2013 SODIUM LEVELS (mg/100g) | | | | 2015 SODIUM LEVELS (mg/100g) | | | | 2017 SODIUM LEVELS (mg/100g) | | | |
|----------------------------|------------------------------|------|--------|------------|------------------------------|------|--------|------------|------------------------------|------|--------|-----------|------------------------------|------|--------|-----------|
| | No. | Mean | Median | Range | No. | Mean | Median | Range | No. | Mean | Median | Range | No. | Mean | Median | Range |
| COOKING SAUCES | 492 | 1815 | 667 | 0-12140 | 659 | 1546 | 682 | 10-11000 | 521 | 1221 | 490 | 15-8700 | 543 | 1313 | 549 | 8-8950 |
| Meal-based sauces | 321 | 2525 | 1370 | 132-12140 | 415 | 2190 | 1300 | 118-11000 | 310 | 1759 | 1069 | 108-8700 | 334 | 1881 | 1080 | 57-8950 |
| Ambient meal-based sauces | 110 | 542 | 472 | 169-1600 | 137 | 816 | 489 | 188-5890 | 121 | 696 | 416 | 108-8210 | 100 | 554 | 416 | 120-2250 |
| Black bean/Asian | 19 | 871 | 932 | 216-1600 | 44 | 1384 | 706 | 235-5890 | 15 | 1921 | 1760 | 270-8210 | 25 | 947 | 703 | 270-2250 |
| Chicken-based | 13 | 462 | 480 | 320-605 | 16 | 464 | 483 | 340-605 | 21 | 513 | 420 | 330-1601 | 14 | 402 | 403 | 321-485 |
| Curry-based | 54 | 455 | 420 | 280-1090 | 41 | 449 | 387 | 228-1300 | 57 | 440 | 377 | 108-1628 | 33 | 355 | 332 | 272-623 |
| Satay | 6 | 782 | 704 | 409-1310 | 11 | 840 | 615 | 251-3500 | 14 | 620 | 498 | 251-1920 | 5 | 460 | 416 | 251-657 |
| Stroganoff | 3 | 486 | 465 | 435-559 | 4 | 446 | 445 | 430-465 | 5 | 421 | 430 | 373-465 | 3 | 403 | 427 | 353-430 |
| Sweet and sour | 10 | 285 | 272 | 169-560 | 16 | 631 | 494 | 188-1450 | 5 | 347 | 310 | 200-560 | 4 | 246 | 207 | 120-450 |
| Other | 5 | 683 | 718 | 335-1060 | 5 | 781 | 776 | 385-1060 | 4 | 1761 | 1202 | 419-4220 | 16 | 617 | 521 | 220-1610 |
| Curry pastes | 26 | 2157 | 1811 | 563-4660 | 83 | 3048 | 2550 | 526-11000 | 61 | 2260 | 2000 | 283-5960 | 58 | 2000 | 1870 | 251-4530 |
| Liquid meal-based sauces | 73 | 1406 | 1180 | 132-4520 | 116 | 1377 | 1070 | 118-7050 | 81 | 1316 | 1000 | 135-5750 | 112 | 1215 | 881 | 57-4940 |
| Asian-style | 34 | 1615 | 1265 | 132-4520 | 60 | 1617 | 1377 | 118-4520 | 37 | 1736 | 1430 | 135-5750 | 61 | 1619 | 1500 | 135-4940 |
| Casserole | 11 | 1472 | 1382 | 584-2790 | 11 | 939 | 1000 | 394-1347 | 6 | 873 | 905 | 394-1191 | 6 | 722 | 809 | 380-1000 |
| Curry-style | 2 | 613 | 613 | 497-728 | 17 | 1089 | 740 | 322-7050 | 18 | 872 | 698 | 230-2940 | 26 | 655 | 704 | 245-1090 |
| Devilled sausages | 2 | 953 | 953 | 905-1000 | 2 | 854 | 854 | 794-914 | 2 | 854 | 854 | 794-914 | 2 | 480 | 480 | 57-902 |
| Pasta meal | 10 | 1179 | 1136 | 561-1715 | 9 | 857 | 905 | 144-1340 | 1 | 930 | 930 | NA | 3 | 735 | 829 | 486-890 |
| Potato bake | 2 | 1340 | 1340 | 950-1729 | 3 | 1309 | 1174 | 998-1755 | 2 | 1162 | 1162 | 568-1755 | 2 | 958 | 958 | 568-1347 |
| Stroganoff | 2 | 1070 | 1070 | 960-1180 | 2 | 755 | 755 | 589-920 | 3 | 1720 | 1080 | 589-3490 | 1 | 1080 | 1080 | NA |
| Other | 10 | 1177 | 1219 | 629-1462 | 12 | 1586 | 1219 | 611-5671 | 12 | 941 | 800 | 385-2415 | 11 | 892 | 867 | 396-1650 |
| Powdered meal-based sauces | 112 | 5288 | 5200 | 883-12140 | 79 | 4863 | 4800 | 298-11000 | 47 | 4608 | 4650 | 507-8700 | 64 | 5011 | 5250 | 715-8950 |
| Casserole | 32 | 5268 | 5345 | 2420-10144 | 20 | 5293 | 5039 | 298-10144 | 7 | 6201 | 6560 | 3880-8150 | 11 | 6418 | 7060 | 2850-8700 |
| Chili con carne | 2 | 4910 | 4910 | 4660-5160 | 5 | 5562 | 5170 | 2940-10300 | 3 | 4017 | 3925 | 2940-5185 | 2 | 4928 | 4928 | 3925-5930 |
| Curry-based | 14 | 5442 | 4845 | 2500-12140 | 13 | 4623 | 4320 | 636-11000 | 11 | 4399 | 4940 | 507-8700 | 6 | 5114 | 5532 | 2890-6240 |
| Devilled sausages | 4 | 2348 | 2465 | 883-3580 | 5 | 2676 | 2230 | 1480-4890 | 2 | 2440 | 2440 | 2200-2680 | 5 | 1535 | 1240 | 715-2680 |
| Pasta-based | 11 | 4766 | 4260 | 2820-7490 | 3 | 3613 | 3570 | 2850-4420 | 2 | 3418 | 3418 | 2825-4010 | 3 | 4302 | 3200 | 2825-6880 |
| Potato bake | 15 | 6015 | 5824 | 3920-8185 | 12 | 6356 | 6235 | 5170-8185 | 8 | 5795 | 5958 | 3685-6830 | 6 | 5797 | 6040 | 3880-6830 |
| Stroganoff | 6 | 4728 | 4590 | 3360-6576 | 6 | 4784 | 4685 | 2710-6576 | 4 | 5185 | 4760 | 4570-6650 | 5 | 4810 | 4650 | 2400-6860 |
| Other | 28 | 5617 | 4906 | 3000-11200 | 15 | 4081 | 3710 | 515-8800 | 10 | 3389 | 3885 | 641-4990 | 26 | 5007 | 5100 | 2100-8950 |
| Pasta sauces | 144 | 490 | 446 | 0-1540 | 219 | 459 | 395 | 15-1597 | 211 | 430 | 383 | 15-1597 | 186 | 413 | 377 | 8-1350 |
| Ambient pasta sauces | 120 | 472 | 447 | 19-1200 | 160 | 410 | 390 | 15-1200 | 170 | 376 | 380 | 15-898 | 145 | 342 | 368 | 8-750 |
| Cream-based | 10 | 545 | 544 | 423-751 | 20 | 476 | 467 | 321-751 | 19 | 452 | 438 | 341-745 | 13 | 397 | 416 | 292-506 |
| Pasta sauce with meat | 2 | 396 | 396 | 338-454 | 2 | 521 | 521 | 479-563 | 4 | 493 | 479 | 450-563 | 5 | 394 | 450 | 130-480 |

| | | | | | | | | | | | | | | | | |
|-----------------------|-----|------|------|----------|-----|------|------|----------|-----|------|------|----------|-----|-----|------|----------|
| Tomato-based | 108 | 466 | 444 | 19-1200 | 138 | 398 | 385 | 15-1200 | 147 | 363 | 370 | 15-898 | 127 | 334 | 360 | 8-750 |
| Fresh pasta sauces | 15 | 315 | 310 | 0-480 | 36 | 323 | 301 | 116-660 | 21 | 315 | 273 | 116-547 | 21 | 376 | 364 | 190-547 |
| Cream-based | 5 | 355 | 366 | 270-480 | 7 | 324 | 270 | 258-498 | 5 | 372 | 310 | 250-547 | 4 | 404 | 423 | 270-498 |
| Pasta sauce with meat | 3 | 357 | 310 | 290-470 | 5 | 356 | 321 | 290-443 | 5 | 332 | 315 | 190-443 | 7 | 405 | 382 | 315-547 |
| Tomato-based | 7 | 268 | 310 | 0-410 | 24 | 316 | 301 | 116-660 | 11 | 280 | 265 | 116-471 | 10 | 344 | 330 | 190-490 |
| Pesto | 9 | 1026 | 1113 | 248-1540 | 23 | 1012 | 1080 | 458-1597 | 20 | 1010 | 1090 | 466-1597 | 20 | 969 | 1083 | 259-1350 |
| Tomato paste | 27 | 431 | 420 | 22-980 | 25 | 379 | 234 | 10-1099 | 0 | NA | NA | NA | 23 | 345 | 241 | 9-1210 |

Table 2: Cooking sauces categories with FHD targets: proportion of products meeting the targets from 2010 to 2017

| FOOD CATEGORIES | FHD Target (mg/100g) | 2010 | | | 2013 | | | 2015 | | | 2017 | | |
|---|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|
| | | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target |
| Asian-style sauces ¹ | 680 | 69 | 25 | 36 | 131 | 42 | 32 | 71 | 23 | 32 | 95 | 30 | 32 |
| Indian-style sauces ² | 420 | 56 | 27 | 48 | 58 | 29 | 50 | 75 | 45 | 60 | 59 | 29 | 49 |
| Pasta sauces ³ | 420 | 145 | 62 | 43 | 205 | 129 | 63 | 192 | 141 | 73 | 169 | 127 | 75 |
| Other (simmer type sauces) ⁴ | 420 | 48 | 4 | 8 | 55 | 7 | 13 | 55 | 16 | 29 | 55 | 20 | 36 |
| TOTAL | NA | 318 | 118 | 37 | 449 | 207 | 46 | 393 | 225 | 57 | 378 | 206 | 55 |

¹ Includes Black bean/Asian ambient, satay ambient, sweet and sour ambient meal based sauces, and Asian-style liquid recipe bases; ² Includes curry-based ambient meal-based sauces and curry-style liquid recipe bases; ³ Includes ambient cream-based, ambient pasta sauce with meat, ambient tomato-based, fresh cream-based, fresh pasta sauce with meat, fresh tomato-based pasta sauces, and pasta meal liquid recipe bases;

⁴ Includes chicken-based, stroganoff and other ambient meal-based sauces, and casserole, devilled sausages, potato bake, stroganoff and other liquid recipe bases

Table 3: Cooking sauces categories with UK targets (average): proportion of products meeting the targets from 2010 to 2017

| FOOD CATEGORIES | UK Target (mg/100g) | 2010 | | | 2013 | | | 2015 | | | 2017 | | |
|---|---------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|
| | | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target |
| All cook in and pasta sauces ¹ | 300 | 317 | 33 | 10 | 439 | 63 | 14 | 379 | 59 | 16 | 362 | 59 | 16 |
| Pesto and other thick sauces ² | 550 | 9 | 1 | 11 | 23 | 2 | 9 | 20 | 2 | 10 | 20 | 3 | 15 |
| Thick pastes ³ | 1300 | 53 | 30 | 57 | 108 | 34 | 31 | 61 | 11 | 18 | 81 | 37 | 46 |
| TOTAL | NA | 379 | 64 | 17 | 570 | 99 | 17 | 460 | 72 | 16 | 463 | 99 | 21 |

¹ Includes ambient and liquid meal-based sauces (excluding passata), and ambient and fresh pasta sauces; ² Includes pesto; ³ Includes curry and tomato pastes

Table 4: Cooking sauces categories with UK targets (maximum): proportion of products meeting the targets from 2010 to 2017

| FOOD CATEGORIES | UK Target (mg/100g) | 2010 | | | 2013 | | | 2015 | | | 2017 | | |
|---|---------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|-----------------|------------------------|----------------------|
| | | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target | No. of products | No. meeting the target | % meeting the target |
| All cook in and pasta sauces ¹ | 370 | 317 | 68 | 21 | 439 | 116 | 26 | 379 | 128 | 34 | 362 | 113 | 31 |
| Pesto and other thick sauces ² | 650 | 9 | 2 | 22 | 23 | 4 | 17 | 20 | 5 | 25 | 20 | 3 | 15 |
| Thick pastes ³ | 1500 | 53 | 36 | 68 | 108 | 39 | 36 | 61 | 13 | 21 | 81 | 39 | 48 |
| TOTAL | NA | 379 | 106 | 28 | 570 | 159 | 28 | 460 | 146 | 32 | 463 | 155 | 33 |

1 Includes ambient and liquid meal-based sauces (excluding passata), and ambient and fresh pasta sauces; 2 Includes pesto; 3 Includes curry and tomato pastes