POTASSIUM-ENRICHED SALT

A simple switch to help your patients reduce blood pressure

"Healthcare professionals should recommend to patients a switch from regular salt to potassium-enriched salt as a practical and effective way to reduce sodium intake and increase potassium intake to lower blood pressure."

Dr. Bruce Neal

Executive Director,
The George Institute for
Global Health, Australia

1.9 MILLION DEATHS

were attributable to *high sodium diets* in 2021[1]

About

This information booklet highlights the need for potassium-enriched salt as an attractive solution for reducing sodium and increasing potassium intake. It encourages healthcare professionals to recommend potassium-enriched salt as an alternative to regular salt to lower blood pressure among patients. We discuss the health benefits, safety considerations and ease of use for potassium-enriched salt, and outline the need for potassium-enriched salt to accelerate progress on reducing sodium intake globally.

Contributions

Caroline Klinge, Klinge Foods Ltd. is recognised for co-creating and compiling this document.

Dr Katrina Kissock, The George Institute for Global Health is recognised for providing valuable technical contributions and critical review to the content of this document.

Supporters

LO SALT

WORLD HEART FEDERATION

WASSH

Contents

Abbreviations

SDT Suggested dietary target

UL Upper level of intake (Australia & New Zealand) / Tolerable Upper Intake Levels (Canada)

CDRR Chronic Disease Risk Reduction Level

AI Adequate intake

NCD Noncommunicable diseases

WHO World Health Organization

RI Recommended Intake (in the case of salt value is for maximum recommended intake level)

M Male

F Female

DRV Dietary Reference Values

IDD Iodine Deficiency Disorder

Key Messages:

- Potassium-enriched salt is a beneficial alternative to regular table, sea, and rock salts, reducing blood pressure and the risk of stroke, cardiovascular disease, and premature death
- The combined effects of reducing sodium intake and increasing potassium intake on blood pressure reduction are greater than doing either alone
- Many people will benefit from switching to potassium-enriched salt, except for those at risk of hyperkalaemia, such as patients with advanced kidney disease (<1% of the global population) or those taking medicines that raise blood potassium
- Currently, the global population consumes too much sodium and not enough potassium, and the world is off target to meet World Health Organization sodium reduction targets

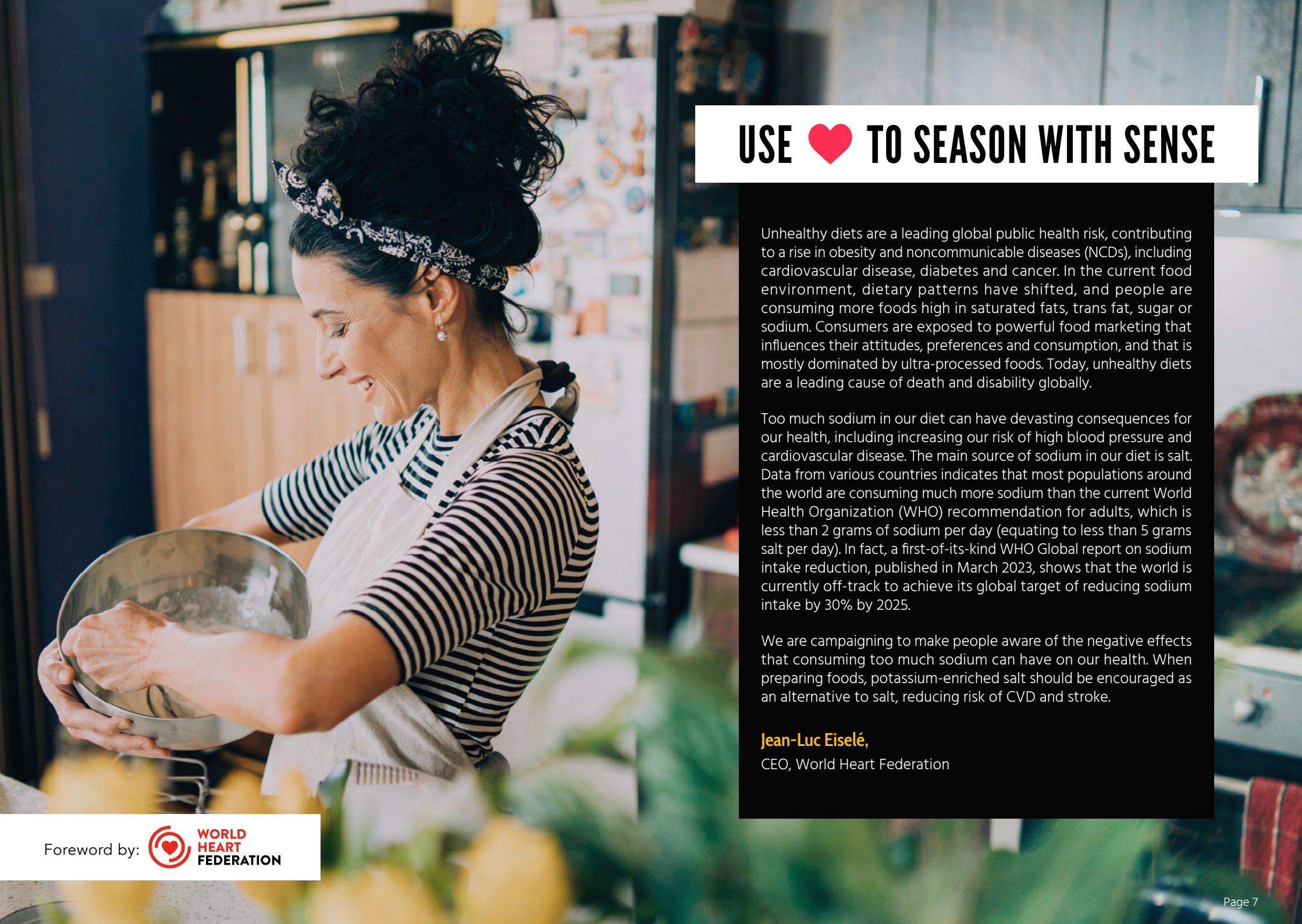
Recommendations: What can you do?

Healthcare professionals are encouraged to recommend potassium-enriched salt as a one-to-one switch in place of regular salt to patients. It is recommended you use the following as a guideline[2]:

- **Strong Recommendation for Patients With Hypertension:** Potassium-enriched salt should be recommended to all patients with hypertension, unless they have advanced kidney disease, are using a potassium supplement, are using a potassium-sparing diuretic, or have another contraindication.
- **Conditional Recommendation for the General Population:** Potassium-enriched salt can be recommended for use by the general population in settings where there is a low likelihood that people with advanced kidney disease will be undiagnosed by the health system and contraindications to use can be printed on product packaging.

"Potassium-enriched salt should be recommended to all patients with hypertension..."

Clinical guidelines in China and Europe, already suggest the use of potassium-enriched salt to reduce blood pressure and the risk of cardiovascular disease[3,4]. Furthermore, the World Health Organization's Global Report on Sodium Reduction[5] suggests that countries may explore ways to increase the use of potassium-enriched salt to reduce sodium intake, particularly where people consume most of their sodium intake from salt added at the table or during cooking.



USE ♥ TO SEASON WITH SENSE

Unhealthy diets are a leading global public health risk, contributing to a rise in obesity and noncommunicable diseases (NCDs), including cardiovascular disease, diabetes and cancer. In the current food environment, dietary patterns have shifted, and people are consuming more foods high in saturated fats, trans fat, sugar or sodium. Consumers are exposed to powerful food marketing that influences their attitudes, preferences and consumption, and that is mostly dominated by ultra-processed foods. Today, unhealthy diets are a leading cause of death and disability globally.

Too much sodium in our diet can have devasting consequences for our health, including increasing our risk of high blood pressure and cardiovascular disease. The main source of sodium in our diet is salt. Data from various countries indicates that most populations around the world are consuming much more sodium than the current World Health Organization (WHO) recommendation for adults, which is less than 2 grams of sodium per day (equating to less than 5 grams salt per day). In fact, a first-of-its-kind WHO Global report on sodium intake reduction, published in March 2023, shows that the world is currently off-track to achieve its global target of reducing sodium intake by 30% by 2025.

We are campaigning to make people aware of the negative effects that consuming too much sodium can have on our health. When preparing foods, potassium-enriched salt should be encouraged as an alternative to salt, reducing risk of CVD and stroke.

Jean-Luc Eiselé,
CEO, World Heart Federation

Foreword by: WORLD HEART FEDERATION

What is potassium-enriched salt?

Potassium-enriched salt, also known as a 'salt substitute', 'reduced-sodium salt' or 'low-sodium salt' is a product where a proportion of sodium chloride is replaced with potassium chloride.

Regular table salt is almost 100% sodium chloride (except for some trace minerals)*, but for potassium-enriched salt, some or all of the sodium chloride is replaced with potassium chloride.

It is a product that can be used as a direct, one-for-one switch for regular table salt, without affecting taste or functionality. At home it can be used in cooking, seasoning, baking and preserving.

What are the health benefits of potassium-enriched salt?

The health benefits of potassium-enriched salt are backed up by systematic reviews and a large-scale clinical trial[6,7]. The Salt Substitute and Stroke Study (SSaSS) in China randomised 21,000 participants with a history of stroke or who were older with high blood pressure to either use potassium-enriched salt (consisting of 75% sodium chloride and 25% potassium chloride) or continue to use regular salt (consisting of 100% sodium chloride).

Over five years, those assigned to potassium-enriched salt had:

- A lower systolic blood pressure
- A 14% lower risk of stroke
- A 13% lower risk of major cardiovascular events
- A 12% lower risk of premature death.
- No harms from using the potassium-enriched salt
- It was also very well accepted – 92% of participants still used it at the end of the study

The combined effects of reducing sodium intake and increasing potassium intake on blood pressure reduction are greater than doing either alone[8].

Switching regular salt to potassium-enriched salt achieved lower blood pressure across geographies and diverse population subgroups[7].

Potassium-enriched salt can deliver substantial health gains and is likely cost saving since high blood pressure is the leading cause of death in most populations[9].

Are there any safety risks?

While most individuals are expected to benefit from using potassium-enriched salt, there is a potential risk of hyperkalaemia (high blood levels of potassium) amongst those:

- with an impaired ability to excrete potassium via the kidneys (i.e. advanced kidney disease).
- taking medicines that raise blood potassium such as potassium-sparing diuretics or potassium supplements[10].

Potassium-enriched salt should not be recommended to these individuals.

Currently, <1% of the global population has chronic kidney disease (CKD) stage 4-5[11].

However, there is no evidence that use of potassium-enriched salt increases the risk of clinically important hyperkalaemia, either in trials or in the community[7].

Large modelling studies also indicate a favourable benefit to risk ratio, even among those with severe kidney disease[12,13].

*This is true for sea and rock salts also

"Potassium-enriched salt was very easy to use in my cooking with powerful health benefits and I didn't notice any differences in taste."

- Kesugani Bhagyalaxmi (26 years, female), Community Member, Siddipet, Telangana, India

Potassium-enriched salt is a practical and relatively low-cost alternative to salt

Potassium-enriched salt tastes like regular salt and is easy for consumers to use. It can simply be substituted in the same amounts for regular salts when cooking, baking and seasoning.

It is a relatively low cost and effective intervention that can be used as an initial lifestyle recommendation alongside dietary changes and adjunct to drug-based approaches to lowering blood pressure.

Potassium-enriched salt is particularly beneficial in communities where the costs of healthcare services and treatments are high[14,15]. The availability of potassium-enriched salt in low- and middle-income countries continues to grow, while it is currently widely available amongst high-income countries. Healthcare professionals are encouraged to recommend potassium-enriched salt in countries where it is available or becomes available in the future.

Potassium-enriched salt is widely available in most Chinese supermarkets, and is now even sold in remote rural village stores. The price difference between potassium-enriched salt and regular salt in China is minimal at about 1.5 Chinese Yuan (20 cents USD). There is no doubt in the effectiveness of potassium-enriched salt to reduce blood pressure and the risk of cardiovascular diseases.

- Prof Maoyi Tian, Vice-Dean
School of Public Health, Harbin Medical University

Consumer acceptance

Potassium-enriched salt is generally well accepted by consumers. Large-scale trials show that most populations accept and continue to use potassium-enriched salt over long periods[6,16,17], with some studies showing no perceived taste difference[18].

"We should all eat less salt, and the salt we do eat should be potassium-enriched. The world needs action, and now: Switching to potassium-enriched salt is a proven, cost-effective way to prevent many heart attacks and strokes and help people live longer, healthier lives."

- Dr. Tom Frieden,
Resolve To Save Lives, President & CEO

Global Sodium Reduction Efforts

An estimated 2.5 million premature deaths can be prevented each year if global salt consumption is reduced to WHO recommended levels[19]

What has been done by other key stakeholders to reduce sodium intake?

Reducing sodium intake is one of the most cost-effective ways to improve health and reduce the burden of non-communicable diseases[5]. However, despite efforts to educate consumers in reducing salt intake, there has been minimal change in individual behaviour to achieve this.

Global efforts to reduce sodium intake have also been mostly unsuccessful

- 2013: All 194 World Health Organization (WHO) Member States commit to reducing population sodium intake by 30% by 2025[20]
- 2017: WHO recommend several Best Buy Interventions to reduce sodium intake including lowering sodium content in foods, limiting high sodium foods in public institutions, front-of-pack labelling and mass media campaigns[21]
- 2023: Global average sodium intake is more than double the WHO maximum recommended intake[5] and the world is off target to meet the 2025 target of a 30% reduction in population sodium intake

But now consumers have an alternative solution – potassium-enriched salt.

Support from all sectors including government, food industry and healthcare professionals are needed to make the switch to potassium-enriched salt and reduce sodium intake.

Singapore is a country leading in promoting the switch from regular salt to potassium-enriched salt.

In 2022, the Health Promotion Board implemented a 3-pronged strategy to reduce population-level sodium intake that includes:

- Encouraging the replacement of regular salt with lower-sodium alternatives, including potassium-enriched salt, through partnerships with food operators, suppliers and manufacturers
- Increasing the range and variety of lower-sodium sauces and seasonings
- Educating the public on the effects of high sodium intake, and encouraging them to reduce sodium intake, such as by switching to potassium-enriched salt

There has already been some success to date with increased demand for potassium-enriched salt by both consumers and food service providers.

Substitution of regular salt with lower-sodium alternatives, including potassium-enriched salt, is a key pillar of Singapore's sodium reduction strategy. Singapore's Health Promotion Board supports manufacturers on reformulation and trade promotion in distribution and retail channels. We also educate both food and beverage operators as well as consumers on adopting lower-sodium ingredients in their dishes. Such ingredients, which have at least 25% less sodium, can be used as one-for-one replacement without compromising on taste. Clinicians and professional bodies have advised that potassium-enriched salt is safe for individuals, including those with early-stage chronic kidney disease. Individuals with late-stage chronic kidney disease should limit consumption of all forms of salt, whether regular or potassium-enriched.

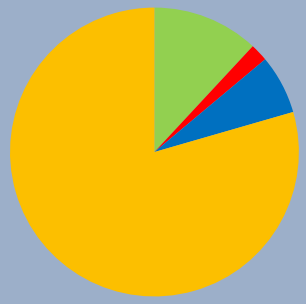
- Mr Terence Ng, Director
Policy & Strategy Development, Health Promotion Board, Singapore

What are the dietary sources of sodium?

Most of the sodium consumed comes from salt (sodium chloride).

While sea, rock and flavour salts have boomed in popularity over recent years, they still contain the same amount of sodium as regular table salt.

The primary contributors to dietary sodium consumption depend on the cultural context and dietary habits of a population.

Low- and Middle-Income Countries	High-Income Countries
Most sodium consumption comes from salt added during cooking and at the table (discretionary salt). Recommending potassium-enriched salt to patients with hypertension in these countries will have a large impact on reducing sodium intake and blood pressure.	While most sodium consumed comes from processed (e.g. ready-made meals, salty snacks, processed meats, etc.) and restaurant foods, recommending potassium-enriched salt to this population still has benefits.
	
Example – China	Example – USA

Key - Discretionary Salt Processed or Restaurant foods Naturally occuring Other*

*Other dietary sodium sources include: bouillons & stocks, condiments (eg. soy sauce), baking additives and certain medications

Reducing Sodium At A Population Level

Typical sodium reduction guidance to patients and consumers is not working!
For example in the UK:

- Consumers are buying the same amount of salt today[22] as they we were almost a decade ago[23]
- Salt use is intrinsic - 1 in 3 add salt instinctively to food without tasting[24]
- Almost ¼ people would continue using salt regardless of health advice[24]
- Salt content is a low priority in food choices[24]

Fortunately, **potassium-enriched salt** is a suitable solution to this.

Guidance to patients to use potassium-enriched salt

- It must be remembered that table salt, sea salt and rock salt are all practically 100% sodium chloride and therefore use should be limited
- If salt is to be added during cooking and seasoning, potassium-enriched salt should be used as a one-for-one switch for salt
- Potassium-enriched salt can be found in supermarkets and online stores though may be described as “reduced-sodium salt”, “salt substitute” or “low-sodium salt”
- Patients should choose a potassium-enriched salt with at least 25% potassium chloride and 75% sodium chloride. Ideally, the salt should be iodised

Sodium is the principal cation in extracellular fluid in the body and is an essential nutrient necessary for maintenance of plasma volume, acid–base balance, transmission of nerve impulses and normal cell function.[25]

While sodium is vital to human physiology, average global intake is currently double that recommended by the WHO[26,27]. This excess sodium intake leads to high blood pressure and increases the risk of cardiovascular disease. Decreasing sodium intake has been shown to reduce blood pressure in adults with and without high blood pressure[28]. For this reason, recommended intake levels of sodium (Table 01) and salt (Table 02) for adults and children have been set.

Current global sodium intake = 4,310mg / day[19] which falls above the WHO maximum recomendation.

Sodium Recommendations

Sodium Intake Recommendation

Region	Policy Guidance	Adults (18+)	Children
	WHO	<2000mg sodium / day[26]	Adjusted downward based on the energy requirements of children relative to those of adults
Australia and New Zealand	Food Standards Australia & New Zealand	<2000mg sodium / day[29] (SDT)	
Canada	Government of Canada	<2300mg sodium / day[30] (UL)	
USA	US Department of Health and Human Services	<2300mg sodium / day[31] (CDRR)	
EU	European Food Safety Authority (EFSA)	2300mg sodium / day[32]	

Table 01

Salt Intake Recommendation

Region	Policy Guidance	Adults (18+)	Children
	WHO	equivalent to <5g salt / day[26]	Adjusted downward based on the energy requirements of children relative to those of adults
UK	Public Health England	<6g salt / day[33] (RI) (NB recommendation is for adults aged 19+)	

Table 02

Potassium-Enriched Salt

Potassium Recommendations

Potassium, the most abundant intracellular cation, is an essential nutrient that is naturally present in many foods and available as a dietary supplement. Potassium is present in all body tissues and is required for normal cell function because of its role in maintaining intracellular fluid volume and transmembrane electrochemical gradients. Potassium has a strong relationship with sodium, the main regulator of extracellular fluid volume, including plasma volume.

Global and national recommendations for potassium intake have been set to reduce blood pressure and the risk of cardiovascular disease.

Current global potassium intake (all years) = 2,250mg / day[34] which falls below the WHO recomendation.

Potassium Intake Recommendation

Region	Policy Guidance	Adults (18+)	Children
	WHO	3510mg potassium / day[35]	Adjusted downward based on the energy requirements of children relative to those of adults
Australia and New Zealand	Food Standards Australia & New Zealand	3800mg potassium / day[36] (AI)(M) 2800mg potassium / day[36] (AI)(F)	
Canada	Government of Canada	4700mg potassium / day[30] (AI)	
USA	US Department of Health and Human Services	3400mg potassium / day[31] (AI)(M) 2600mg potassium / day[31] (AI)(F) (NB recommendation is for adults aged 19+)	
EU	European Food Safety Authority (EFSA)	3500mg potassium / day[32] (AI)	
UK	Public Health England	3500mg potassium / day[33] (NB recommendation is for adults aged 19+)	

Table 03

Concluding Remarks

It is very hard for people to make the changes that health professionals recommend to reduce their salt intake. Learning to cook with less salt, training taste buds to accept less seasoning, and changing decades long shopping habits to pick lower-salt foods is difficult. Thankfully, we now have a practical, low-cost salt reduction option that could help billions of people reduce their salt intake – potassium-enriched salt.

It's absolutely clear from multiple studies done in tens of thousands of people that making a like-for-like switch from regular table salt to potassium-enriched salt can lower blood pressure, as well as reduce the risks of stroke, cardiovascular events, and premature death. If we made a global switch of the salt supply from regular salt to potassium-enriched salt, we could prevent millions of strokes and heart attacks worldwide every year.

However, we need support from all sectors including government, food industry and healthcare to scale-up the use of potassium-enriched salt across the globe. Healthcare professionals play an important role in this and can for the first time confidently recommend a salt reduction intervention that patients will actually be able to do. People that start using potassium-enriched salt find it a great alternative to regular salt, and get major health benefits.

Dr Bruce Neal | MB ChB, PhD, FRCP, FAHA, FAHMS

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