

Sub4Salt

*SAAFoST Sodium Reduction Workshop
2018*

Chane.Brecher@savannah.co.za



SALT

The Silent Killer

WHO:

Salt overdose kills 2.5m
people/year



Intermountain
Medical Center

Worldwide campaigns



campaign launched Aug 2004 in the UK

- awareness campaign (leaflets, information for consumers ...)
- Industry commitment to reduce salt in products, signed by as many manufacturers as possible (final individual targets launched in March 2006)
- Target to be achieved by manufacturers until 2010:

Salt – eat no more than **6g** a day



WASH

World Action on Salt & Health

World Action on Salt and Health (WASH) was established in 2005 and is a global group with the mission to improve the health of populations throughout the world by achieving a gradual reduction in salt intake. WASH will encourage multi-national food companies to reduce salt in their products and will work with Governments in different countries highlighting the need for a population salt reduction strategy. The overall aim is to bring about a reduction in salt intake throughout the world by reducing the amount of salt in processed foods as well as salt added to cooking, and at the table. So far WASH has **299 members** from **70 countries**. Members are mainly experts in hypertension.

AWASH
Australian Division
of World Action on Salt & Health



THE GEORGE INSTITUTE
for International Health

Media Release

**Australians smart on salt
but slow to act**

15 May 2007

New consumer research has found that, while most Australians know too much salt is bad for health, they are not doing much about it. These and other key findings will be announced at the launch of "The Drop the Salt!" campaign in Sydney today.



National Heart Lung and Blood Institute
People Science Health

The **DASH**
Eating Plan



Research has found that diet affects the development of high blood pressure, or hypertension (the medical term). Recently, two studies showed that blood pressure can be lowered by following a particular eating plan—called the Dietary Approaches to Stop Hypertension (DASH) eating plan—and reducing the amount of sodium consumed.

Salt intakes & targets: South Africa

Intake
10 g/day

Target
5 g/day



55% is already in what we eat
40% is added in households

Sodium reduction: Reformulation strategies

**Remove or
reduce salt**

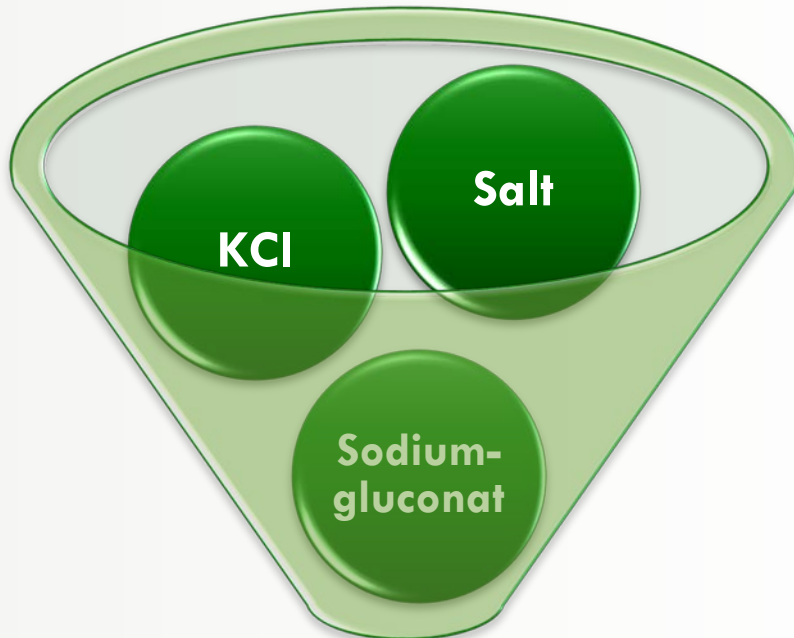
**Replace salt
with alternative
salts**

**Reducing salt
while adding
flavor enhancer**

**Replace high
sodium
ingredients**



What is Sub4Salt?



- **SUB**stitute fo(4)r **SALT**
- Optimised mineral salt blend
 - Sodium Chloride $25 \pm 3\%$
 - Potassium Chloride $10 \pm 3\%$
 - Sodium Gluconate

**35 % sodium
reduced compared
to conventional salt**



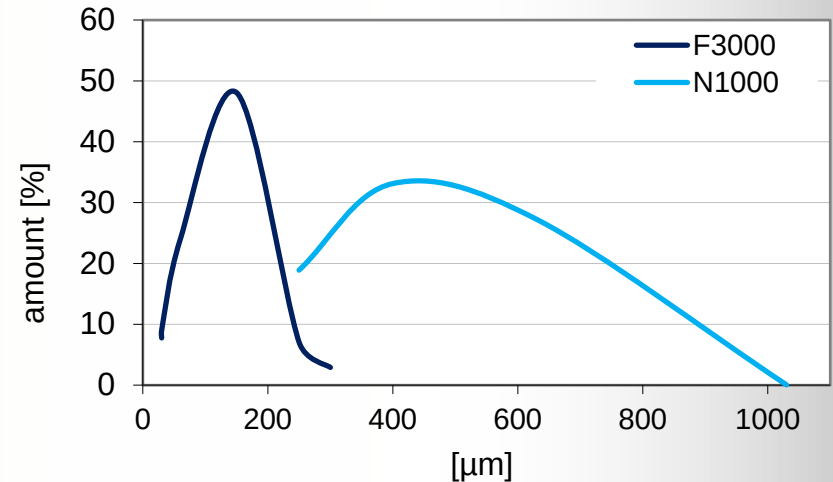
Sub4Salt granulations

- **sub4salt® N1000**

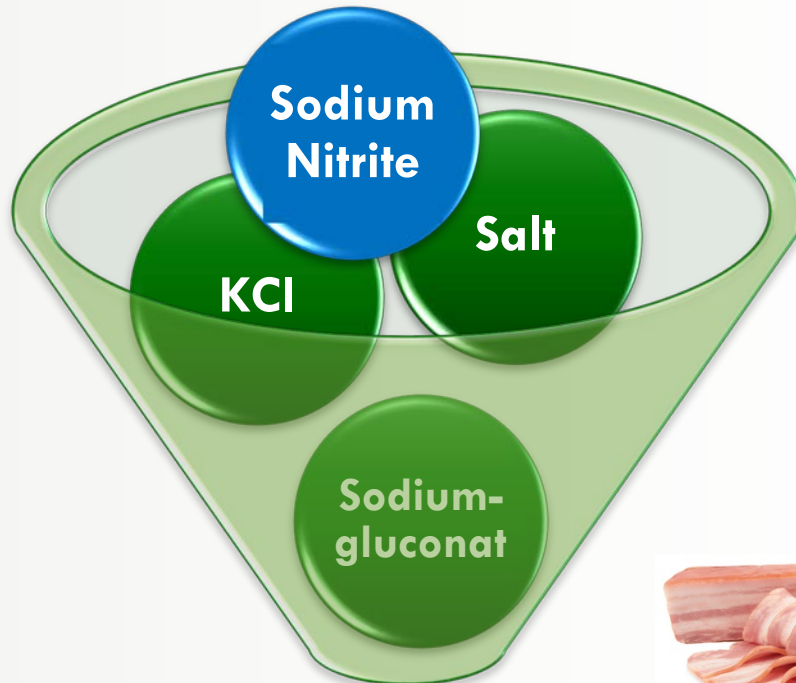
- Granulation < 1000 μm (= 18 mesh)

- **sub4salt® F3000**

- Granulation < 300 μm (= 50 mesh)
- For topical application
- Smaller salt crystals deliver higher saltiness intensity
- Smaller salt crystals deliver a faster saltiness impact (caused by a bigger surface!)
- Highest intensity of salty taste is given with a 4:1 blend of sub4salt® fine and sub4salt®



What is Sub4Salt Cure?



sub4salt® cure 05 → 0.5% sodium nitrite

sub4salt® cure 09 → 0.9% sodium nitrite



sub4salt®
REDUCED SODIUM

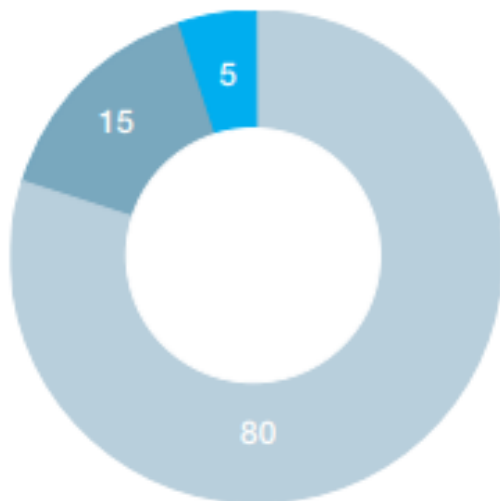


35 % sodium reduced compared to conventional curing salt



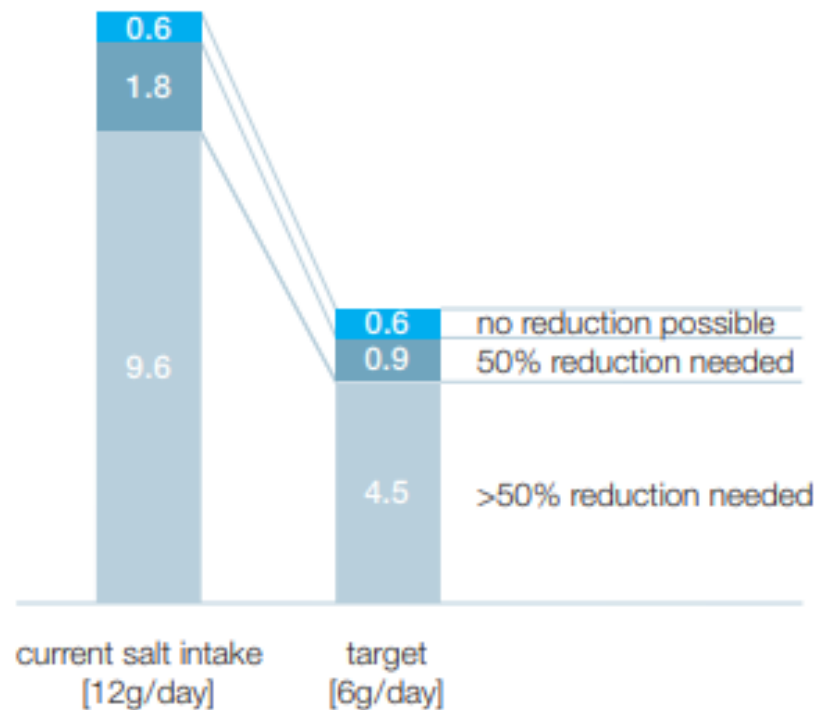
Distribution of daily sodium uptake

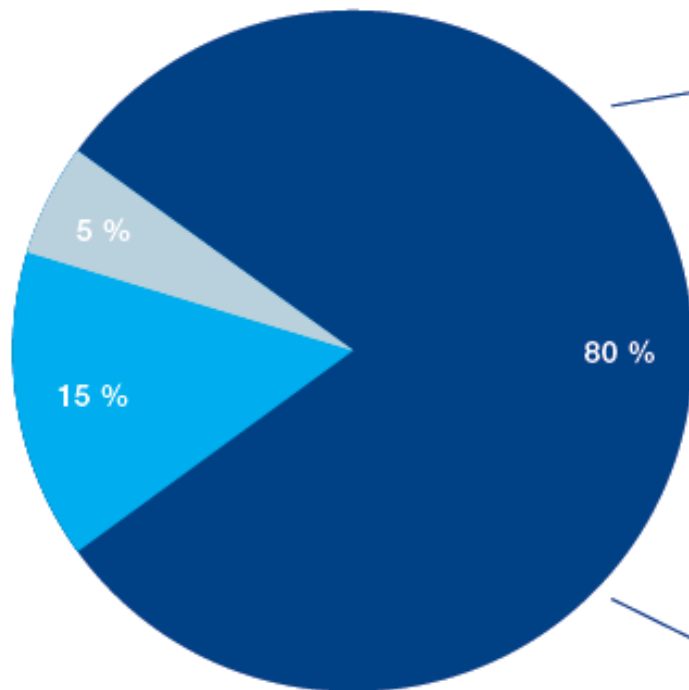
Sources of salt intake in %



- processed food
- added table salt by consumers
- naturally occurring sodium in food

Challenge of salt reduction





■ processed food
■ added table salt by consumer
■ naturally sodium content in food

40 %



Various

11 %



Dairy

21 %



Processed
meat

28 %



Bakery

How to use Sub4Salt

1:1 replacement

Similar characteristics

Sodium reduction of 35%

No major adjustments
to recipe required



How to use Sub4Salt

NaCl in original receipe [g/100g]	corresponding amount of sodium [g/100g]	level of sodium reduction [%]	amount of sodium after reduction [g/100g]	required amount of sub4salt® [g/100g]
10	3.95	25	2.96	11.85
		50	1.98	7.90
5	1.98	25	1.48	5.93
		50	0.99	3.95
2	0.79	25	0.59	2.37
		50	0.40	1.58
1.5	0.59	25	0.44	1.78
		50	0.30	1.19
1	0.40	25	0.30	1.19
		50	0.20	0.79
0.5	0.20	25	0.15	0.59
		50	0.10	0.40

1g NaCl contains 0.4g Na

1g Sub4Salt® contains 0.26g Na

1:1 replacement = 35% Na reduction



Cost

Sub4Salt versus **REGULAR SALT**

Example: white bread (500g / sales price: ~R15.00)

Salt (Sub4Salt®) content in bread: 1.4% (1.2% in dough)

Treatment cost with salt: $0.014 \times 0.5\text{kg} \times \text{R}12/\text{kg} = \text{R}0.084$

Treatment cost with sub4salt®: $0.014 \times 0.5\text{kg} \times \text{R}35/\text{kg} = \text{R}0.245$

**For less than 25ct per bread = 35% Na reduced
product based on R35/kg for Sub4Salt®**

Benefits of Sub4Salt

- Similar usage level to NaCl
- Comparable salty taste characteristics
- 30-50% sodium reduction in processed food
- No metallic off-flavour
- Easy handling (same physical properties like salt)
- Applicable in wet & dry food systems
- Different granulations for different applications
- *Advantages for manufacturers & retail:*
 - Product benefit clearly symbolized
 - High recognition factor for products
 - Regulations compliant



SAVANNAH

Where to use Sub4Salt

Snacks



Soups & Sauces



Bakery



Cured processed meat



Snacks: Clusters & Popcorn

Challenges: Loss of salty taste

Dosage: 1:1 = 35% reduction

Nutrition Information

	per 100 g
Energy	2376 kJ / 574 kcal
Protein	22 g
Carbohydrates	9.3 g
of which sugars	2.9 g
Fat	46 g
Sodium	250 mg

0.85%

Directions

1 Prepare syrup with ingredients indicated under #5 using hot water and agitation

Rosemary herb nut & seed clusters

made with ERYLITE®-based Syrup



Ingredients	Supplier	Quantity
1 Pumpkin Seeds (unsalted)		26.75 % 7.49 g
2 Whole Almonds (unsalted)		21.80 % 6.10 g
3 Sunflower Seeds (unsalted)		18.77 % 5.25 g
4 Almond Pieces (unsalted)		15.94 % 4.46 g
5 Syrup		15.00 % 4.20 g
(Water)		(2.26 g)
(ERYLITE® Stevia 100)	Jungbunzlauer	(1.68 g)
(sub4salt®)	Jungbunzlauer	(0.24 g)
(Xanthan Gum FNCS)	Jungbunzlauer	(0.015 g)
6 Garlic Powder		0.83 % 0.23 g
7 Rosemary, ground		0.35 % 0.10 g
8 L(+)-Lactic Acid 90 %	Jungbunzlauer	0.35 % 0.10 g
9 Black Pepper, ground		0.09 % 0.02 g
10 Thyme, ground		0.07 % 0.02 g
11 Sage, ground		0.06 % 0.02 g
Total		100 % 28 g

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Category

Maximum Sodium amount in product (mg Na/100g)

Becomes effective

Ready to eat savoury
snacks

700

June 2019

Snacks: Clusters & Popcorn

Challenges: Loss of salty taste

Dosage: 1:1 = 35% reduction

Nutritional information of Popcorn

per 100g of end product

Energy	1834kJ/438kcal
Protein	9.1g
Carbohydrates	61.3g
Fat	17.6g
Total sodium	564.5mg

0.4% N1000, 1.8% F3000

HealthyChoices@Jungbunzlauer

Directions

HealthyChoices@Jungbunzlauer

Popcorn
(lightly salted)
with sub4salt®
Recipe (35% less sodium)

Ingredients for 2 Tbsp (35g) unpopped	Quantity	%
1 Popcorn kernels	29.3g	83.8
2 Oil (canola)	4.9g	14.0
3 sub4salt® N1000	0.2g	0.4
4 sub4salt® F3000	0.6g	1.8

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snacks

700

June 2019

Sub4Salt in Snacks

US



Mexico



Greece



Mexico

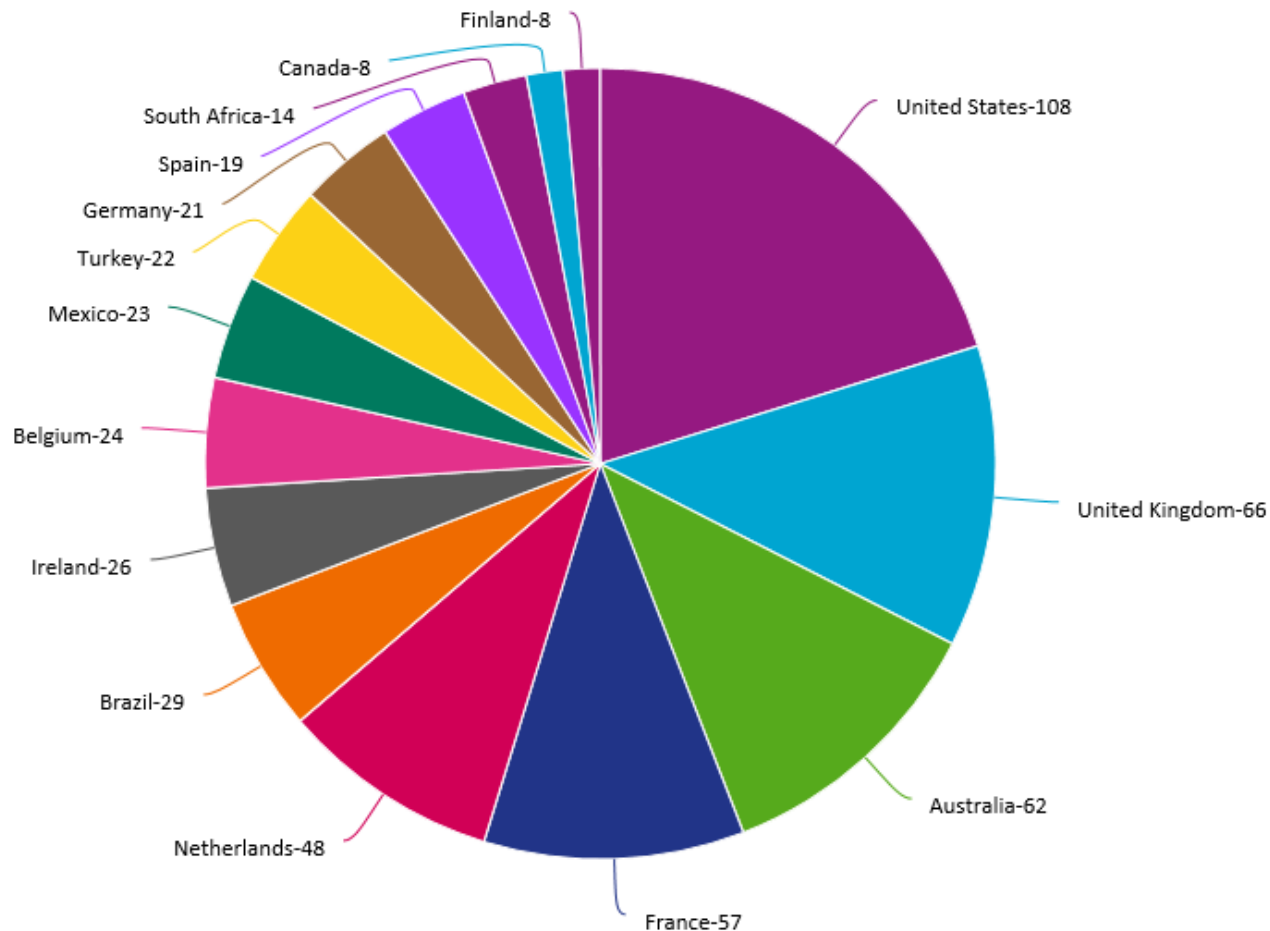


Chile



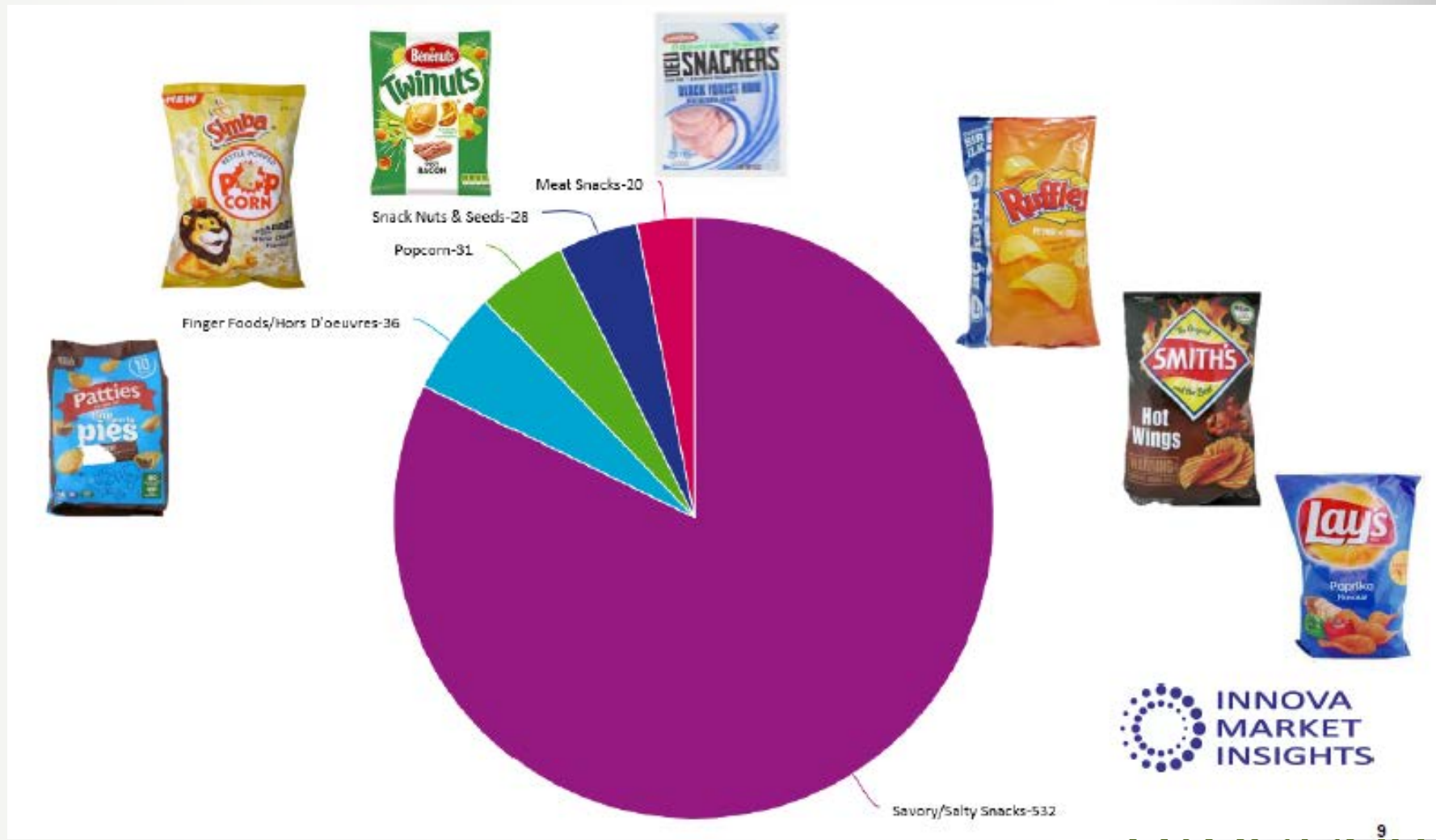
Market Insights

Snacks with KCl, NaCl in the last 3 years – Top countries:



Market Insights

Snacks with KCl, NaCl in the last 3 years – Snack categories:



Dry soup powder

Challenges: Change in taste profile
Dosage: 1:1 = 35%-50% reduction

Nutrition Information

per 100 g end product

Energy	134 kJ / 32 kcal
Protein	1.0 g
Carbohydrates	8.3 g
Fat	1.1 g
Sodium	290 mg

Dry mix: 1933 mg Na/100g

7.8%

Directions

- 1 Blend all ingredients to a homogeneous powder
- 2 Add 100 ml of boiling water to 15 g of instant soup powder

Sodium
reduced dry
tomato soup

with sub4salt® and Citric Acid



Ingredients	Supplier	Quantity
1 Tomato powder	Obipektin, Tomato 707 071	24.9 % 62.3 g
2 Fat powder	Friesland Campina, Vana Crema 35H	19.9 % 49.8 g
3 Maltodextrin	Avebe Food	16.3 % 40.7 g
4 Starch	National Starch, Ultra Spense 5	15.9 % 39.8 g
5 sub4salt® (N1000)	Jungbunzlauer	7.8 % 19.5 g
6 Sugar	Südzucker	7.0 % 17.5 g
7 Yeast extract	Georg Fles GmbH, Bionis YE NS	4.0 % 10.0 g
8 Tomato flavour	Symrise	1.4 % 3.5 g
9 Food colour	Symrise	2.0 % 5.0 g
10 Parsley, dried	Horeca	0.8 % 2.0 g
11 Citric Acid Anhydrous (F3500)	Jungbunzlauer	0.035 % 0.088 g
Total		100 % 250 g

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Category

**Maximum Sodium amount
in product (mg Na/100g)**

Becomes effective

Dry soup powder

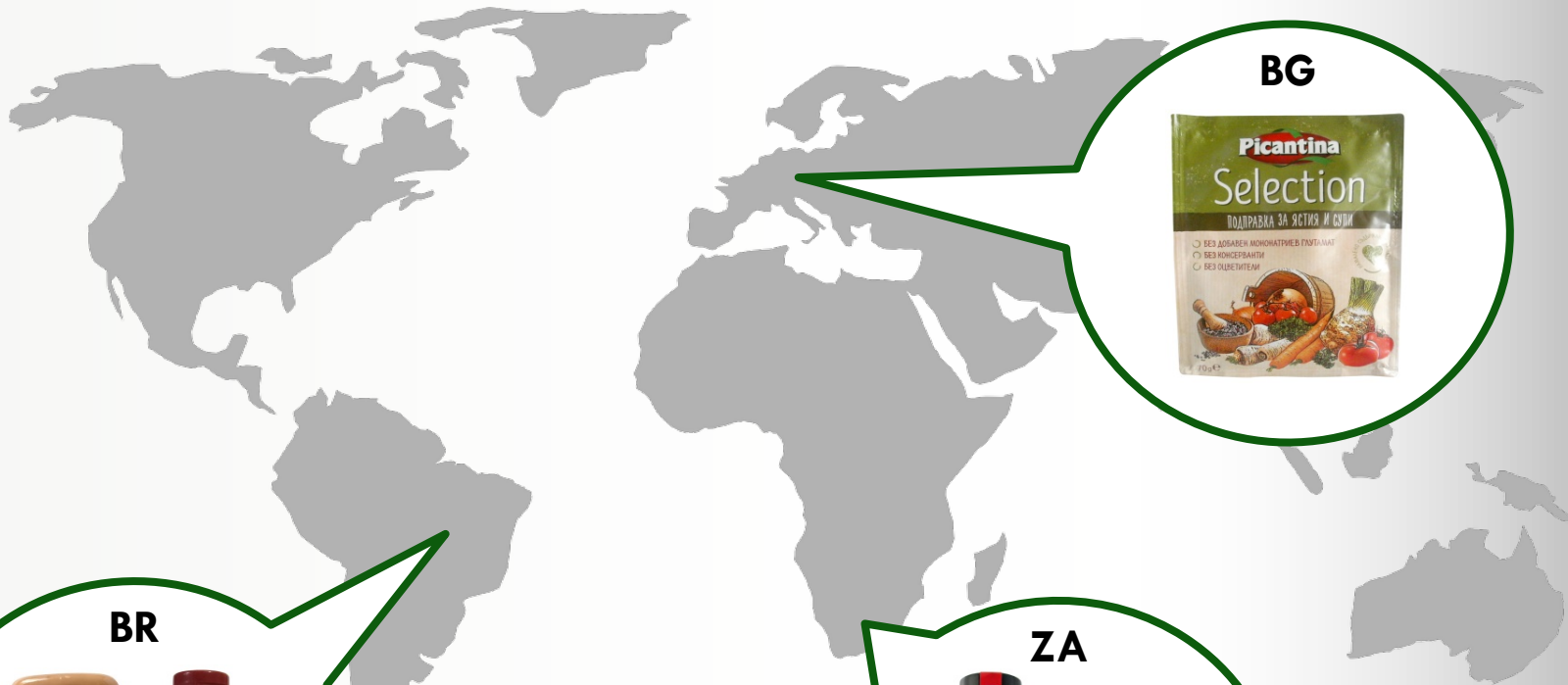
3500

June 2019

Dry soup powder

	Dosage on dry soup powder [%]	Sodium reduction
NaCl	7 %	0 %
sub4salt [®]	8 %	25 %
sub4salt [®]	5.4 %	50 %

S4S in Sauces & Seasonings



BG



BR



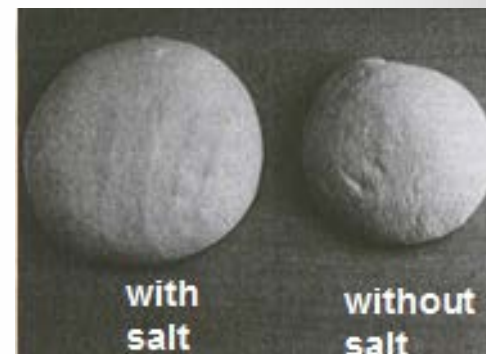
ZA



AVANNAH

Bakery: White Bread

- Function of salt in bakery:
 - Flavour enhancer
 - Positive influence on biochemical reactions during dough formation
 - Regulation on fermentation processes
 - Improved browning
 - → **Total exclusion not possible**



- Recipe:
 - Flour, water, yeast, improver, salt (Sub4Salt®)

- Results:

	Dosage on flour base	Sodium reduction
NaCl	2 %	0 %
sub4salt®	2.3 %	~25 %
sub4salt®	1.5 %	~50 %

Meat: Sausage

Challenges: Reduced water binding capacity &
Yield loss during cooking
Dosage: 1:1 = 35%-50% reduction

Nutrition Information

per 100 g finished product

Energy	1230 kJ / 298 kcal
Protein	11 g
Carbohydrates	0.2 g
Fat	28 g
Sodium	536 mg

1.8%

Directions

1. Remove visible fat and connective tissue and cut meat into small pieces
2. Grind meat pieces through a plate with 2 mm openings
3. Add lean meat with water (ice) and all other ingredients into the chopping bowl
4. Adjust bowl speed to 10 rpm, cutting knives to 5000 rpm, and pressure to 150 mbar
5. Leave product in the chopping bowl until a smooth emulsion with a temperature of 12°C is reached
6. Fill the emulsified meat by a vacuum-filler into natural casings

50% sodium* and 60% phosphate
reduced Wiener sausage

with sub4salt® cure, Potassium Lactate / Potassium Acetate and Sodium Gluconate



Recipe

Ingredients	Supplier	Quantity	
RAW MATERIALS			
1 Beef cuts (BII)		100 g	10 %
2 Meat cuts pork (PII - PII)		350 g	35 %
3 Pork fat (PVI)		250 g	25 %
4 Pork cheeks (PVI)		100 g	10 %
5 Water (ice)		200 g	20 %
Total		1000 g	100 %
SPICES AND ADDITIVES			
6 Potassium Lactate/ Potassium Acetate 60%	Jungbunzlauer	17.5 g	1.75 %
7 sub4salt® cure 05	Jungbunzlauer	18.0 g	1.80 %
8 Condiments (pepper white, mace, coriander, ginger)	Frutarom	3.5 g	0.35 %
9 Sodium Gluconate	Jungbunzlauer	1.8 g	0.18 %
10 Sodium Diphosphate	Frutarom	1.2 g	0.12 %
11 Sodium Ascorbate	Frutarom	0.5 g	0.05 %

* Compared to standard recipe containing 2.5% sodium lactate and 1.8% curing salt

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Category

Maximum Sodium amount
in product (mg Na/100g)

Becomes effective

Processed meat
(cured)

850

June 2019

Sub4Salt Cure in Meat products

US



UK



UK



NL



Greece



Chile

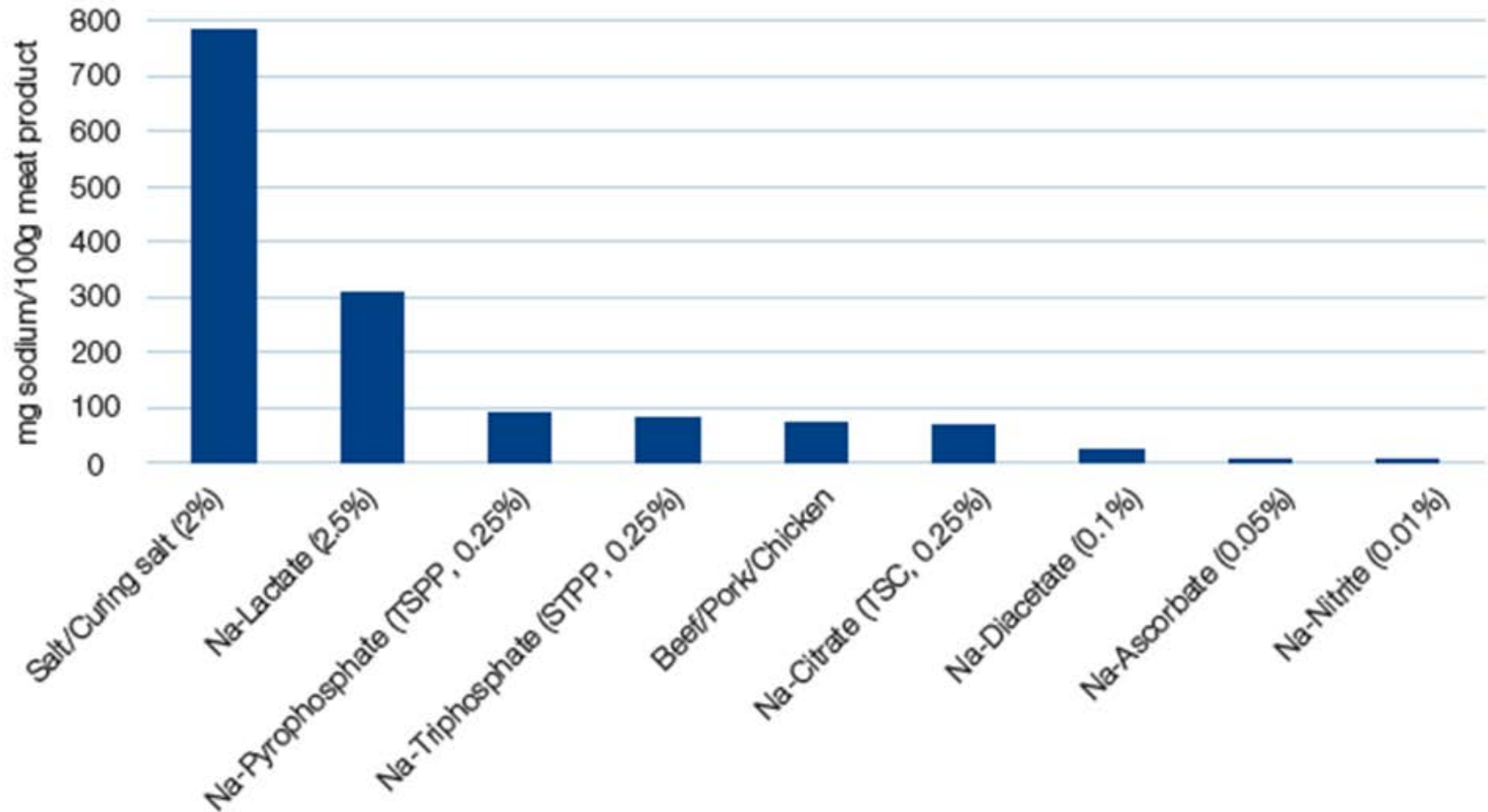


Chile



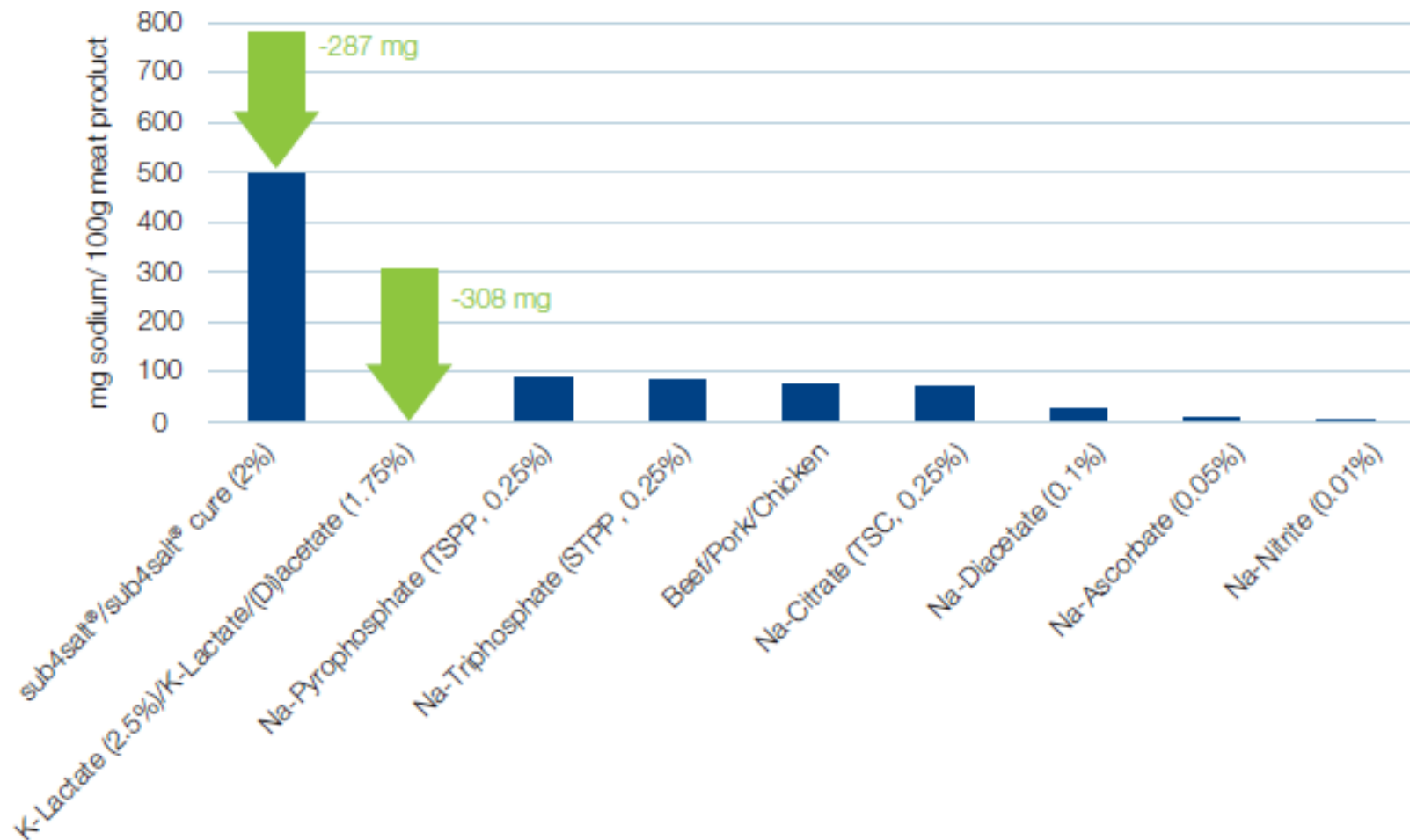
Sub4Salt in Meat

Graph 4: Sodium sources in meat products



Sub4Salt in Meat

Graph 5: Impact of the replacement of salt or curing salt by sub4salt® or sub4salt® cure, and of sodium lactate by potassium lactate or blends thereof with (di)acetates on the contribution of sodium sources in meat products



Regulatory

- In USA
 - Sub4Salt labelled as being a “mineral blend of Sodium Chloride”
- In EU
 - Sub4Salt has to be labelled as a “blend of additives with salt”.
- In SA
 - Sub4Salt has to be labelled as a “salt substitute”.
- Declaration
 - NaCl
 - KCl (or E508)
 - Sodium Gluconate (or E576)



Nutritional Claims

- “Reduced Sodium” / “Light (lite) in Sodium”
 - At least 25% less Sodium than regular version
- “Low Sodium”
 - $<0.12\text{g Na}/100\text{g}$
- “Very low Sodium”
 - $<0.04\text{g Na}/100\text{g}$
- “Sodium Free” / “Salt free”
 - $<0.005\text{g Na}/100\text{g}$

- According to Regulation (EC) No. 1924/2006

Sub4Salt in Shakers

DK



DE



RO



DE



Thank You

Chane.Brecher@savannah.co.za

