



# 1<sup>st</sup> International Meeting on I&D in the Food Sector

## 3<sup>o</sup> Workshop de I&D no Setor Agroalimentar

# Developing mixtures with aromatic plants for Salt Reduction in soups

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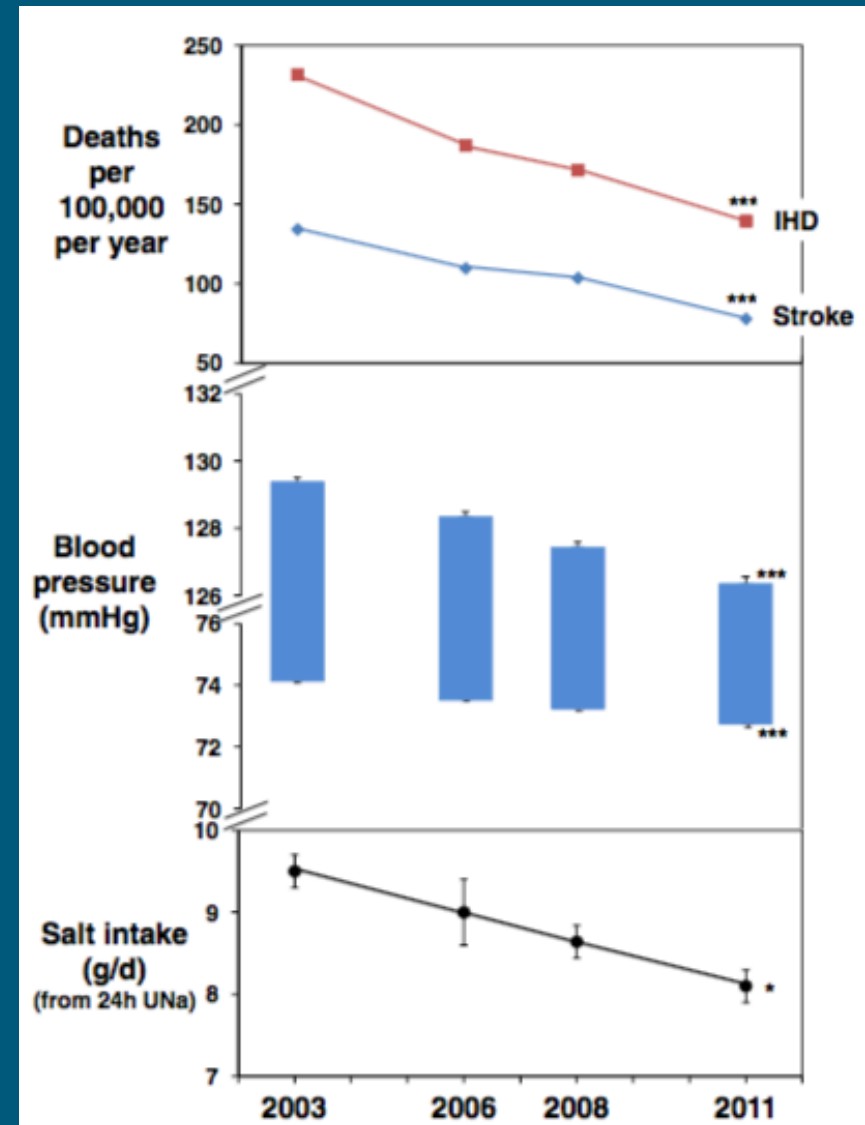
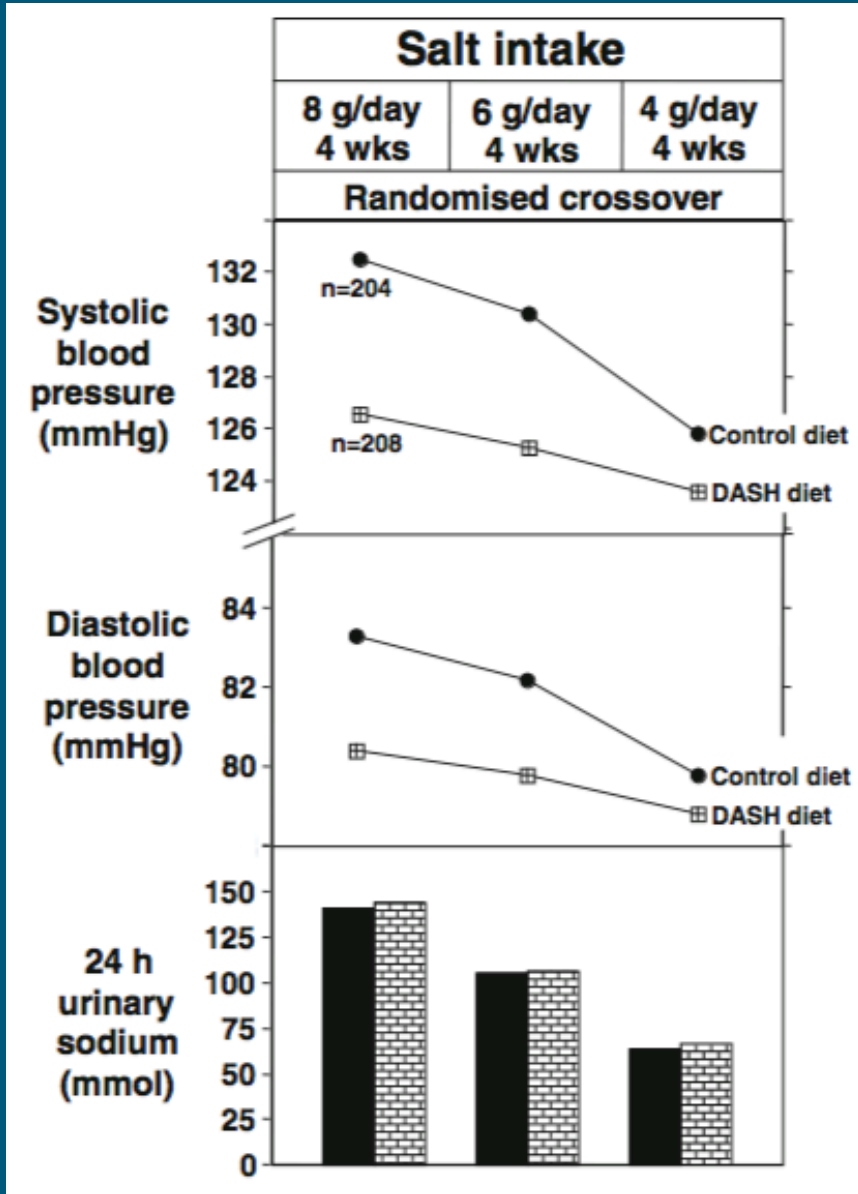


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# salt and health

- excessive salt consumption is a risk factor
  - Arterial Hypertension **22% worldwide**  
**29% Portugal**
  - Heart disease and stroke **Premature mortality**
- salt reduction
  - 9 to 12 g / day → 5 to 6 g / day → significant impact in mortality

# salt and health



# salt and food

- > 75% salt intake
- cooked or processed food

**WHO recommendation**

**5 g / day**

**Portugal → 10,7 g/day**

**↓ salt - priority**



MacGregor et al, 2013

WHO, GLOBAL STATUS REPORT on noncommunicable diseases, 2014

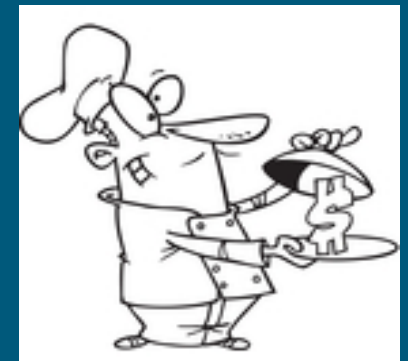
DGS, 2017, Portugal

# salt and catering

- salt is used "empirically"
- taste
- voluntary programs have failed in the long term
- catering sector is resistant - profit impact
- salt substitutes - negative perception



"The patrons at table five want to know how do you manage to get such a wonderful taste in your salt-free soup"



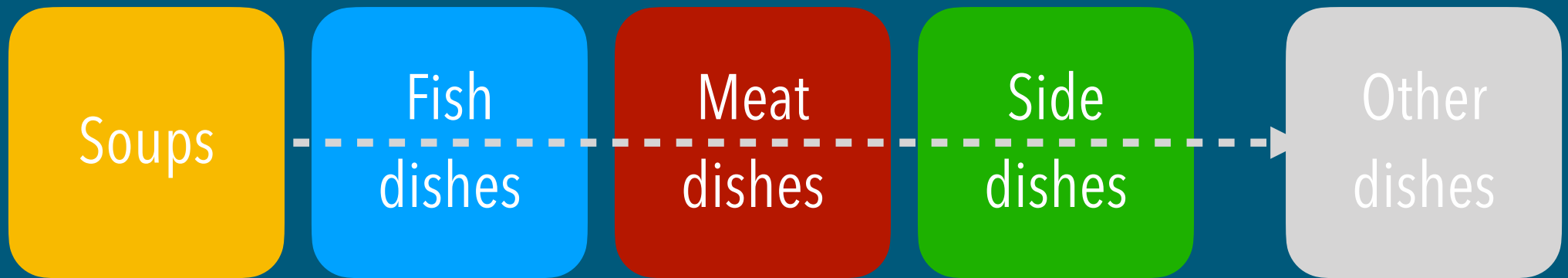
Viegas, 2013

Ansar, 2012

Wilson et al, 2016

# objective

Develop formulations for salt reduction



# methodology

- Select variety of aromatic plants
  - Characterise aromatic plants - Na and K
- Select and group soups
  - Define mixture of aromatic plants / other ingredients

# methodology

- *Apium graveolens*
- *Anethum graveolens*
- *Artemisia dracunculus*
- *Coriadrum sativum*
- *Foeniculum vulgare*
- *Mentha spicata*
- *Ocium Basilicum*
- *Petroselinum crispum.*
- *Salvia officinalis*
- *Rosmarinus officinalis*
- *Satureja montana*
- *Thymbra spicata*
- *Thymus caespitius*
- *Thymus x citriodorus*
- *Thymus fragantissimus*
- *Thymus mastichina*
- *Thymus vulgaris*
- *Zingiber officinale*

- Vegetable based soups
  - Carrot soup
  - Bean soup
- Meat based soups
- Mixture:
  - *Apium graveolens*
  - *Artemisia dracunculus*
  - *Coriadrum sativum*
  - *Mentha spicata*
  - *Petroselinum crispum*
  - Celery, onion and pumpkin - caramelised and dehydrated



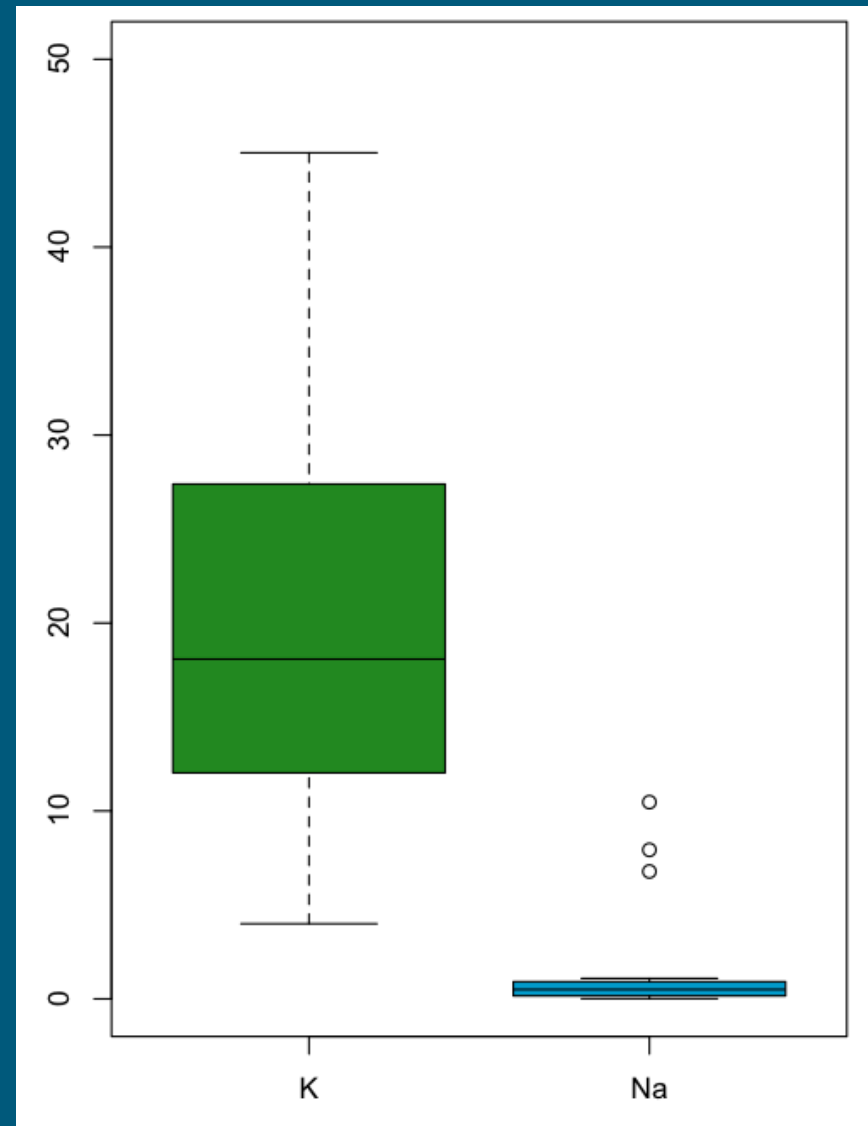
# results - aromatic plants

	K (mg/g)	Na (mg/g)
Min	4	0,01
1Q	12,03	0,16
Median	18,08	0,5
3Q	27,39	0,915
Max	45,02	10,47
Average	19,76	1,497

**DRI**

**AI (mg)**  
**4700**

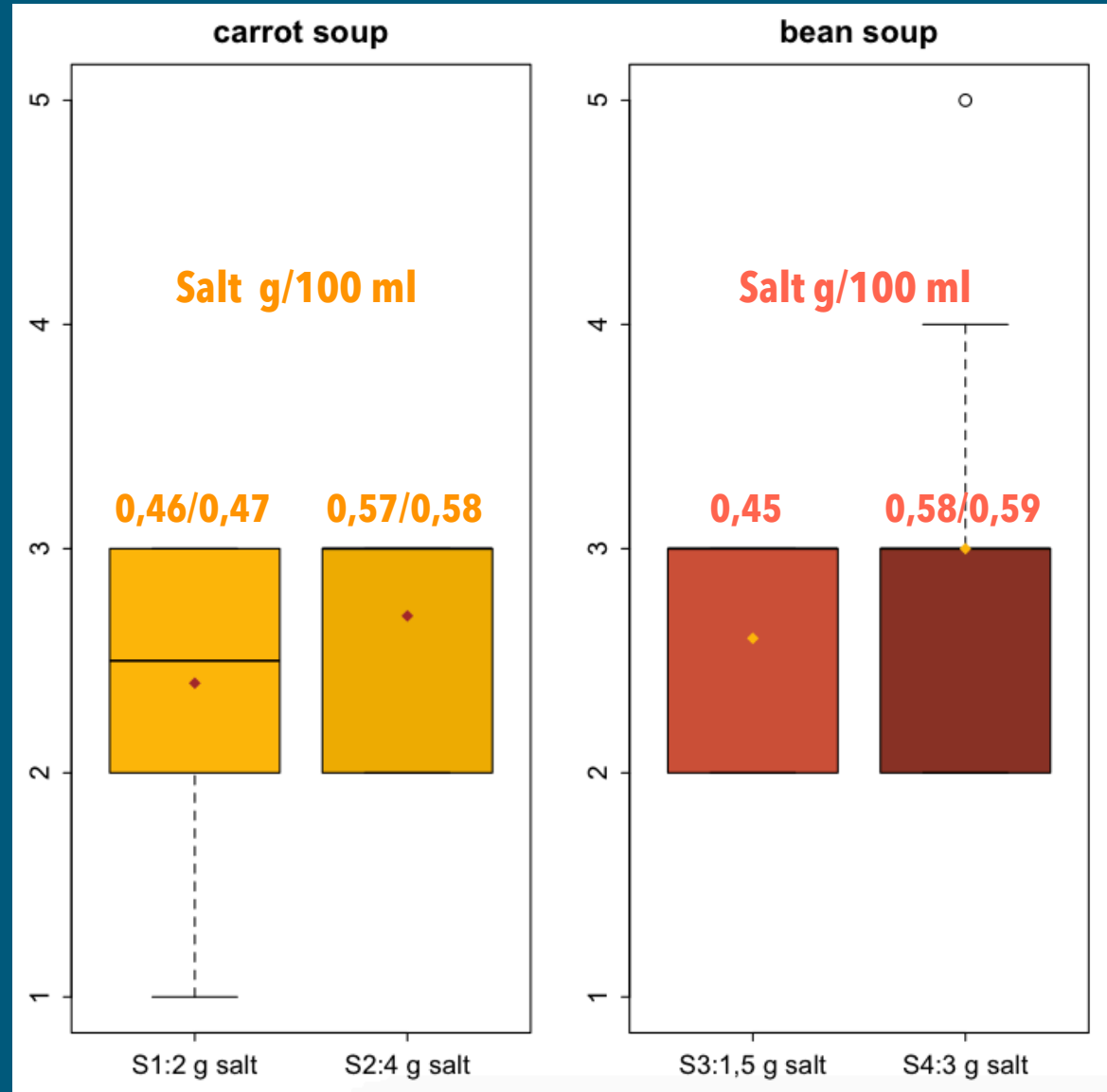
**UL (mg)**  
**2300**



# results - soups

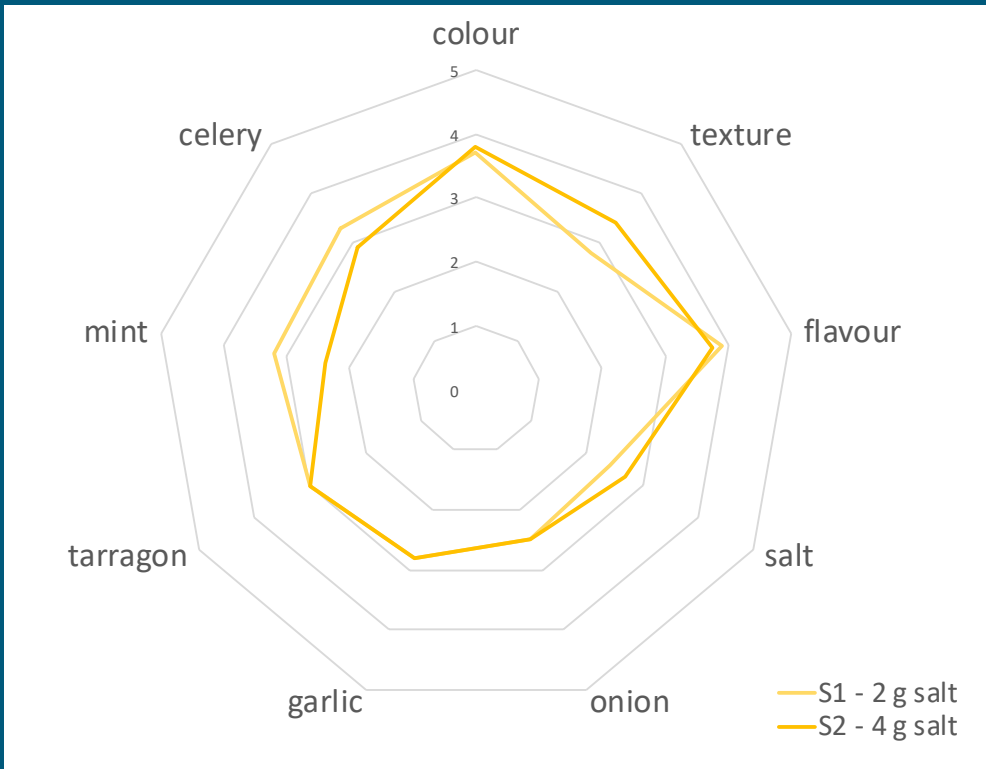
## Salt perception

Average soups - Salt g/100 ml  
0,8 to 1 g



# results - soups

## Carrot soup



## Bean soup



### For both:

Flavour and color - positive results

Texture - less positive result

# nexts steps...

- produce an extract from the mixture
- micro encapsulation
- test the use in soups



# Thank you

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