

# Impact of nitrite reduction on the technological evaluation of cooked pork ham



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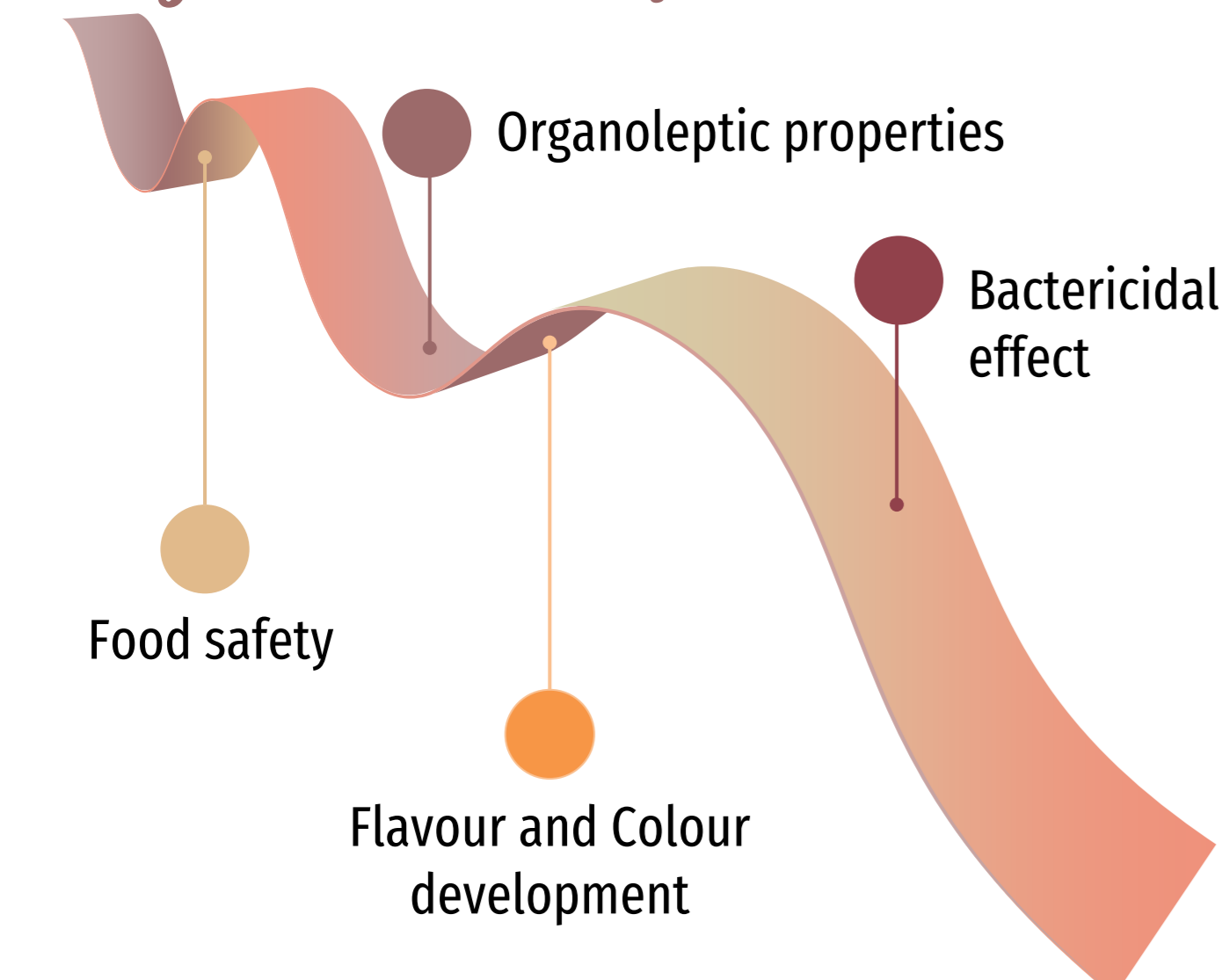
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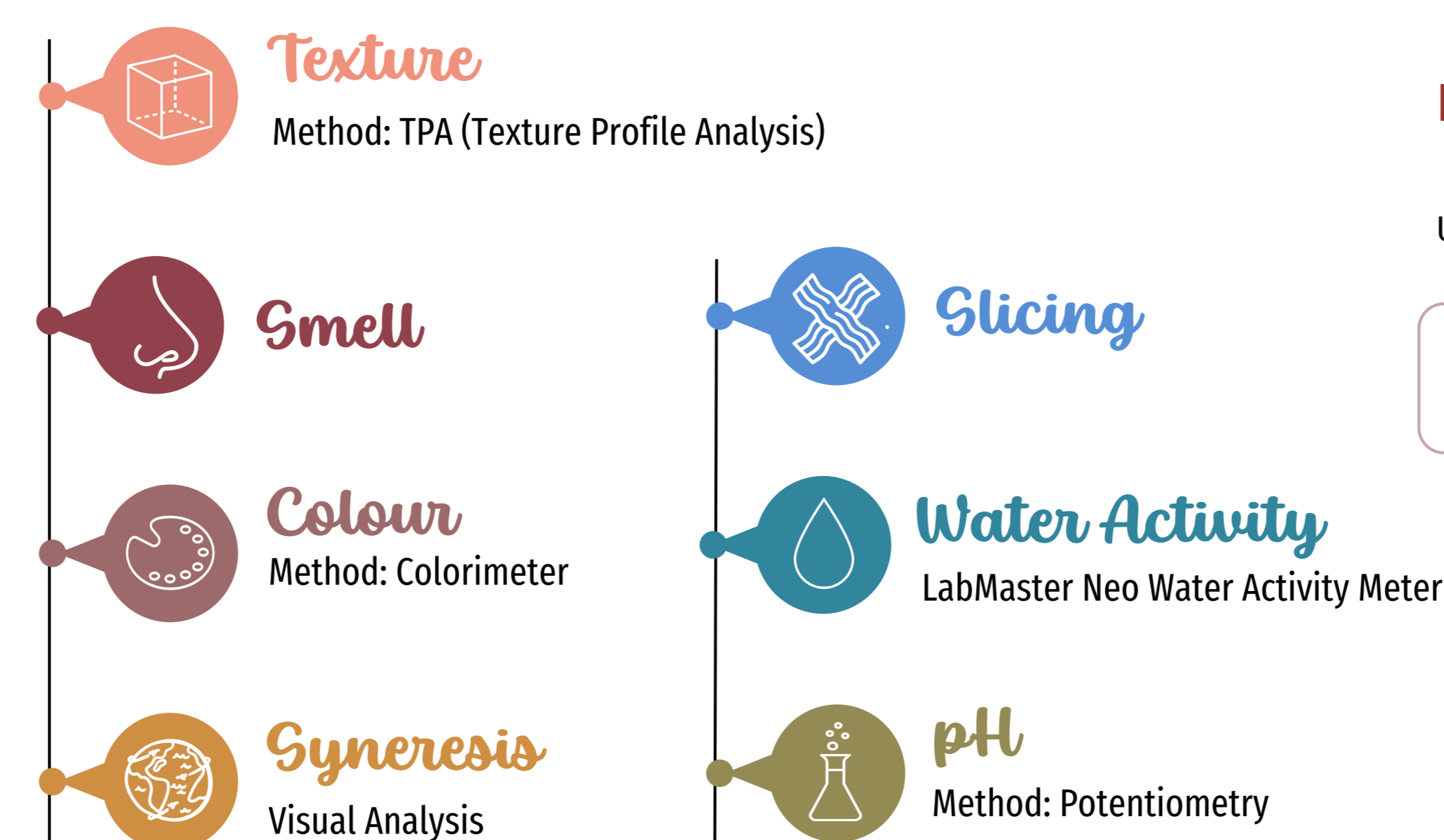


## Background

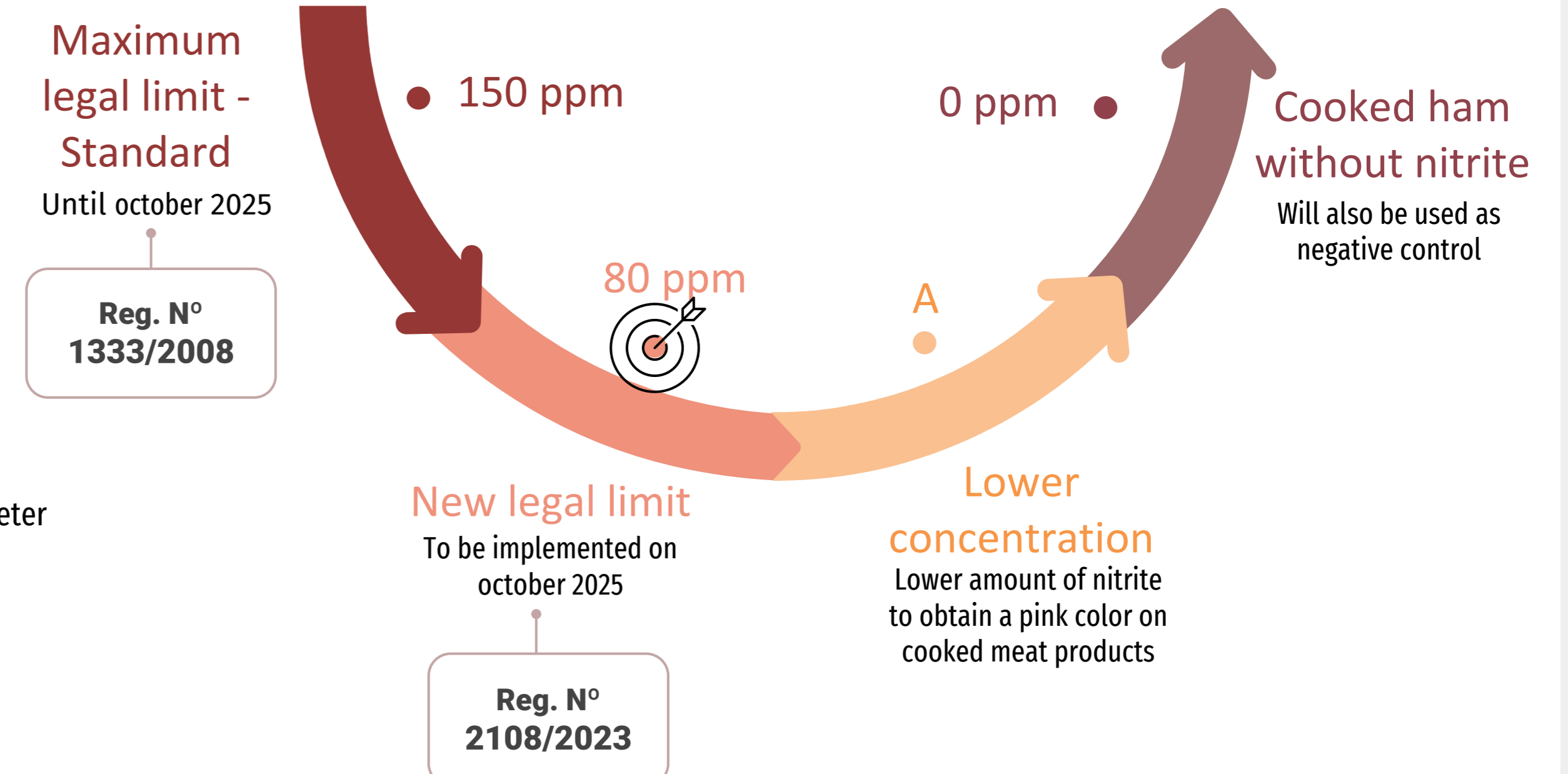
### Why is nitrite important?



## Methods



## Nitrite concentrations added to the product



## Objectives

Study of the impact of nitrite reduction on the technological characteristics and quality of cooked pork ham



## Results

Table 1 – Technological evaluation of cooked pork ham with nitrite reduction

[NO <sub>2</sub> ], ppm	Hardness (N)	a <sub>w</sub>	ΔE	pH	Slicing	Syneresis	Smell
0	283.82 ± 16.02	0.9521 ± 0.0042 <sup>a</sup>	3.29 ± 0.53 <sup>a</sup>	6.2 ± 0.1	Easy	Not detected	Charateristic
A	300.10 ± 16.63	0.9656 ± 0.0043	0.91 ± 0.11	6.2 ± 0.1	Easy	Not detected	Charateristic
80	279.95 ± 12.87	0.9648 ± 0.0059	0.88 ± 0.13	6.2 ± 0.1	Easy	Not detected	Charateristic
150	275.93 ± 14.55	0.9669 ± 0.0048	-	6.1 ± 0.1	Easy	Not detected	Charateristic

All the parameters were evaluated with n=3, at the beginning of products shelflife

<sup>a</sup> The parameters analysed are statistically different when compared with the standard ham

## Discussion

a<sub>w</sub> and colour were the only characteristics of the test products that differed from the standard ham.

The absence of nitrite in the product leads to oxidation, as shown in Figure 2B and confirmed by the ΔE results.

In addition, nitrite removal can lead to lower water retention, resulting in a slightly drier product.



### Texture

Texture analysis is represented by the product's hardness, the necessary force (N) to break the product

### Colour

ΔE (comparison of the prototypes with the standard ham) is the calculation that indicates if the colour can be distinguished by the human eye (if ΔE ≤ 1.0, the colour is considered identical)

### Syneresis

Syneresis indicates if there is free water in the product

### Water Activity (a<sub>w</sub>)

a<sub>w</sub> of standard ham varies between 0.96 and 0.97

### pH

pH of standard cooked pork ham varies between 5.6 and 6.2

### Slicing

Slicing is measured by the ease to slice the sample (hard, medium, easy)

### Smell

Smell can be classified as (not) charateristic (of cooked pork ham products)

## Conclusion and future work

It can be concluded that color and water activity were the only non-compliant parameters in the ham with reduced nitrite compared to the standard ham.

At first glance, it appears feasible to decrease the concentration of nitrites without significant impact on organoleptic properties, although further evaluation of microbiological and chemical characteristics during product shelf-life is necessary.

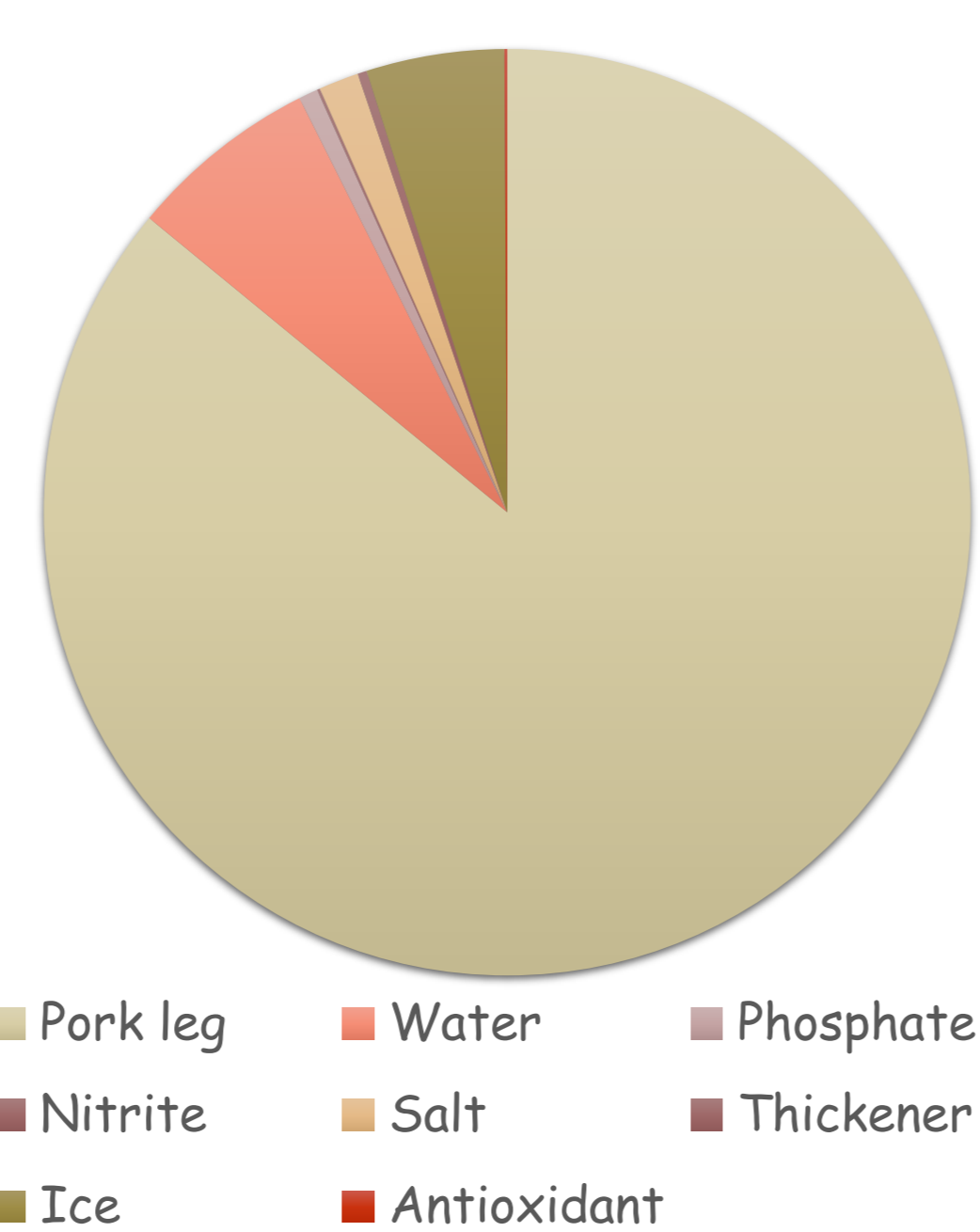


Figure 1: Matrix formula of Cooked Pork Ham



Figure 2: Cooked pork ham appearance before (A) and after (B) heat treatment

## Acknowledgements

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