Effect of Ageing and Hanging method on Flavour Precursors in Beef

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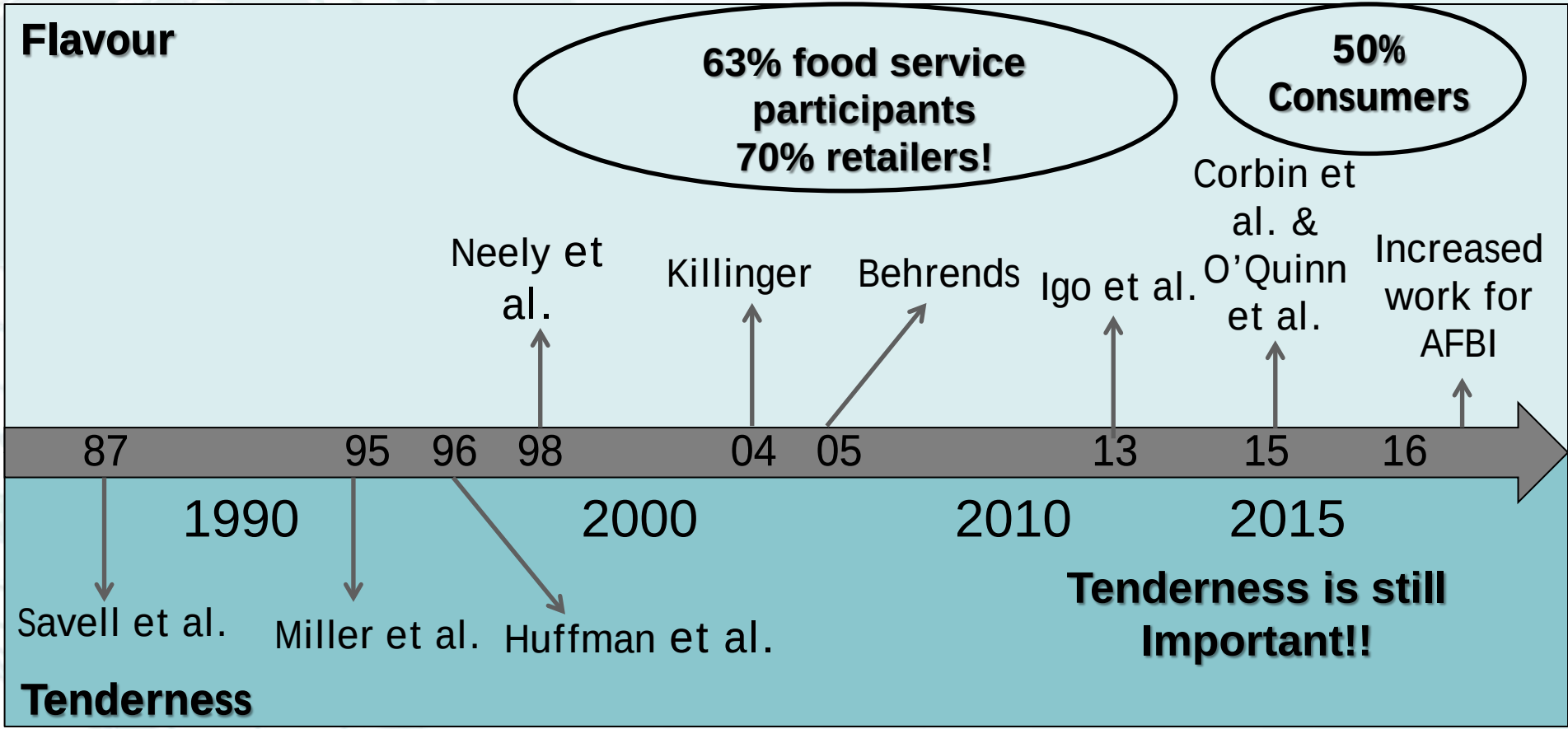
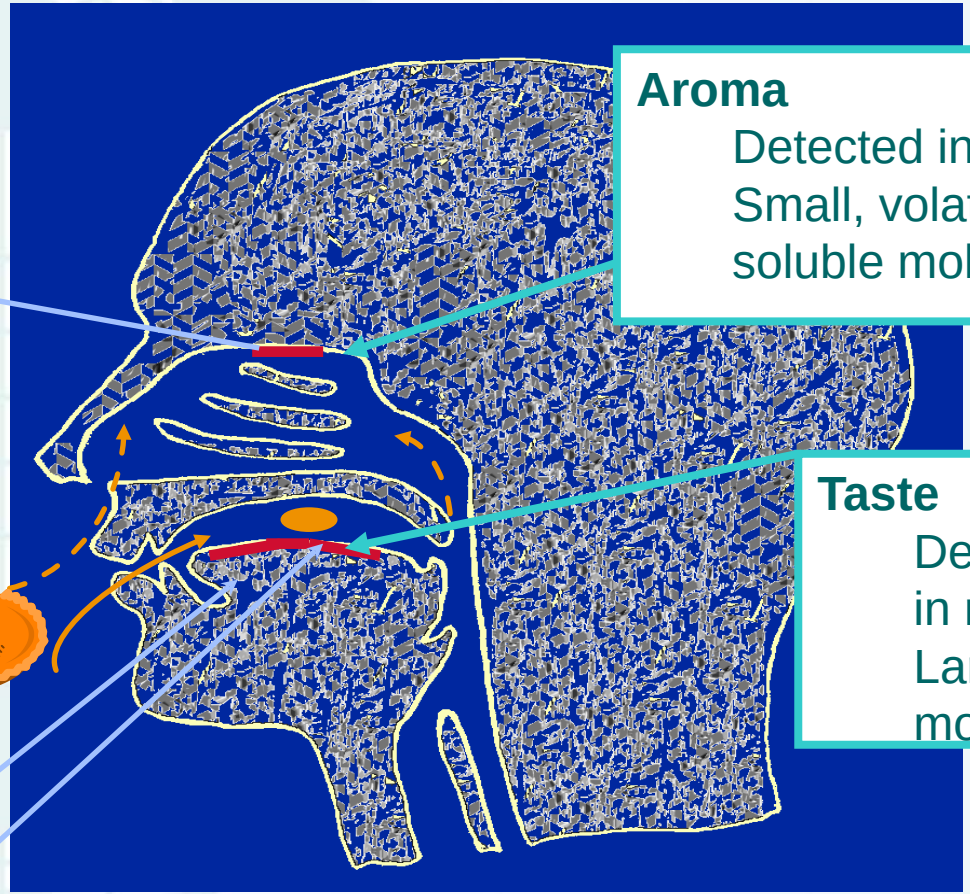
Is Flavour Important?



Perception of Flavour (Taste + Aroma)



Olfactory receptors

Tongue

Taste receptors

Aroma

Detected in nose
Small, volatile, fat soluble molecules

Taste

Detected on tongue and in mouth
Large, water soluble molecules

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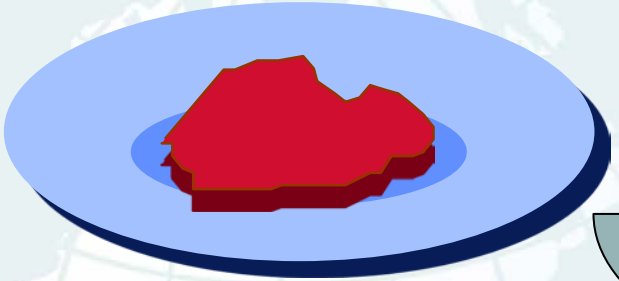
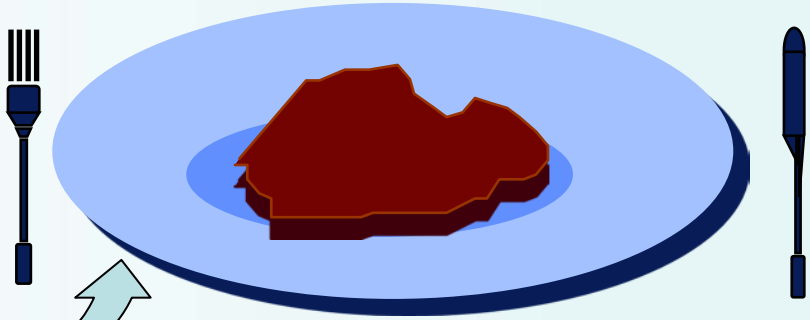
Raw Meat



Cooked Meat



Cooking

Odours in raw meat:

Taste compounds

Flavour precursors

Odours in cooked meat:

Alcohols, aldehydes, ketones, furans, sulphur compounds, pyrazines

What are Flavour Precursors?

A group of compounds that:

- Occur naturally in food stuffs such as meat,
- React together during the cooking process to form volatile odours which in turn contribute to the flavour of cooked food eg. meat.
- Sugars & Sugar Phosphates,
- Ribonucleotides,
- Free Amino acids,
- Dipeptide compounds,
- Fatty Acids and
- Vitamins

Experimental

Experiment 1:

- 54 Cattle, mixed Breed.
- Tenderstretched.
- Sirloin samples aged for 3, 7, 14, 21 and 28 days.

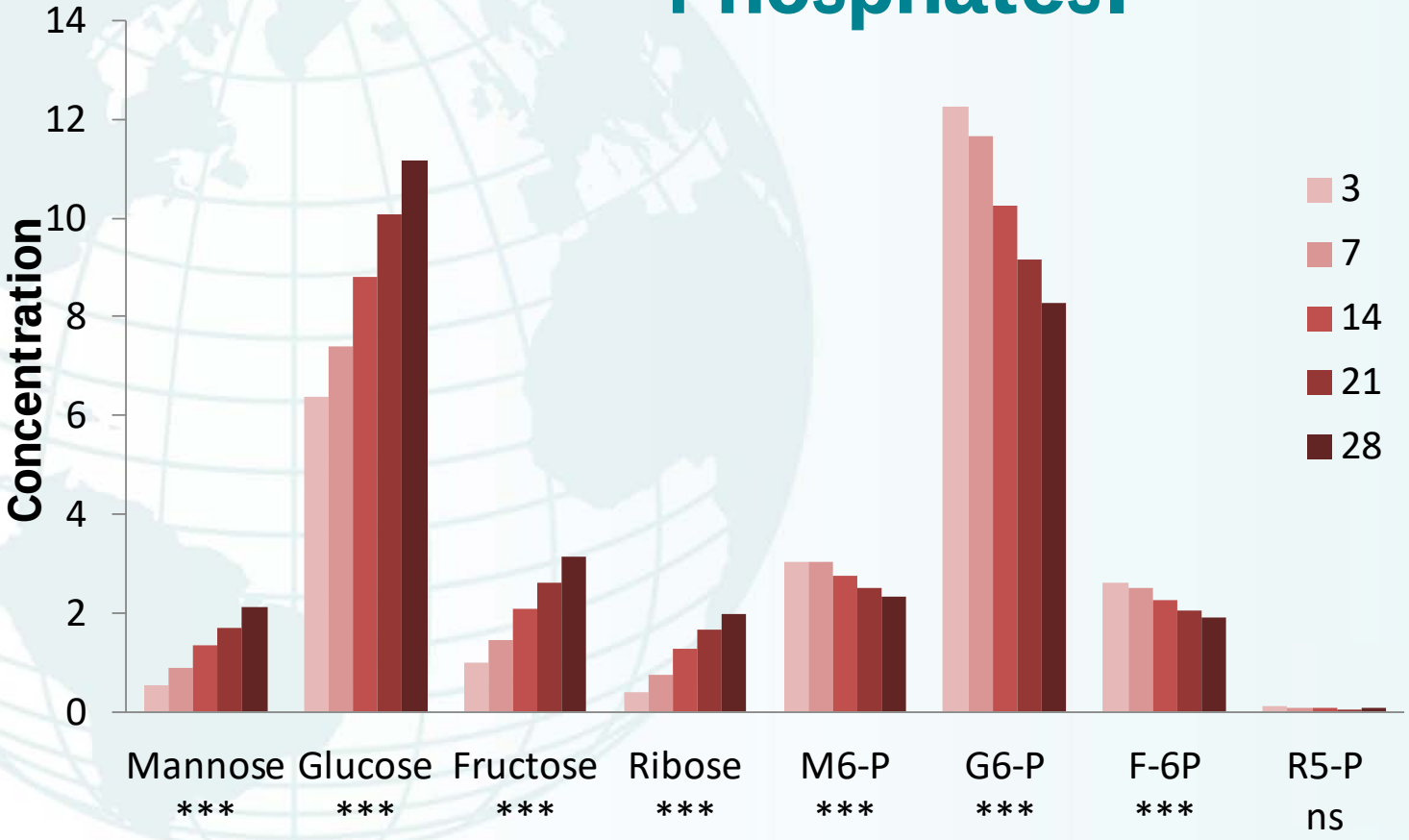
Experiment 2:

- 6 Animals (12 carcase sides).
- Achilles and Tenderstretch.
- Sirloin samples aged for 3, 7, 14 and 21 days.

Analyses:

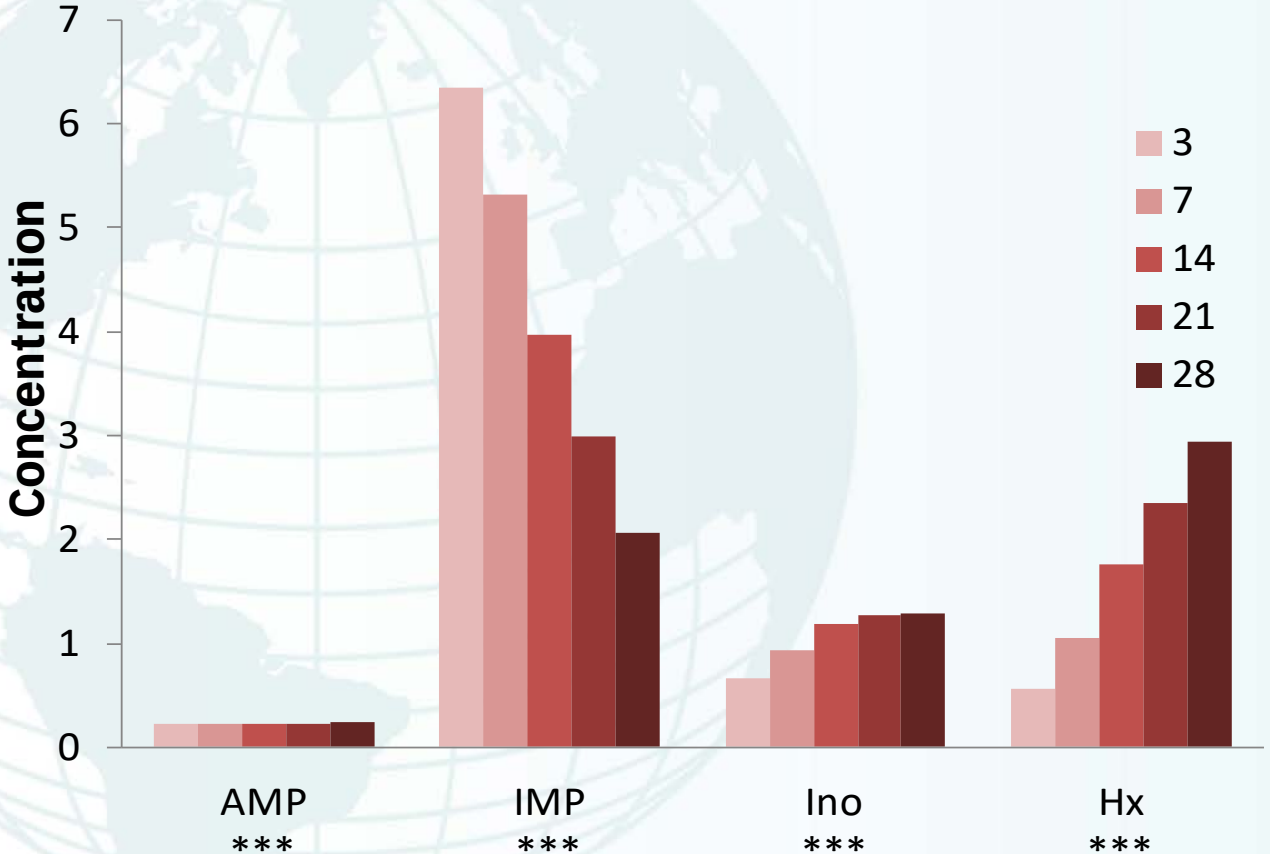
- Sugars and Sugar Phosphates.
- Ribonucleotides.
- Free Amino Acids.

Exp 1:Effect of Ageing on Sugars and Sugar Phosphates.



- ↑ Sugars (P<0.001)
- ↓ Sugar Phosphates (P<0.001)

Exp 1: Effect of Ageing on Ribonucleotides.

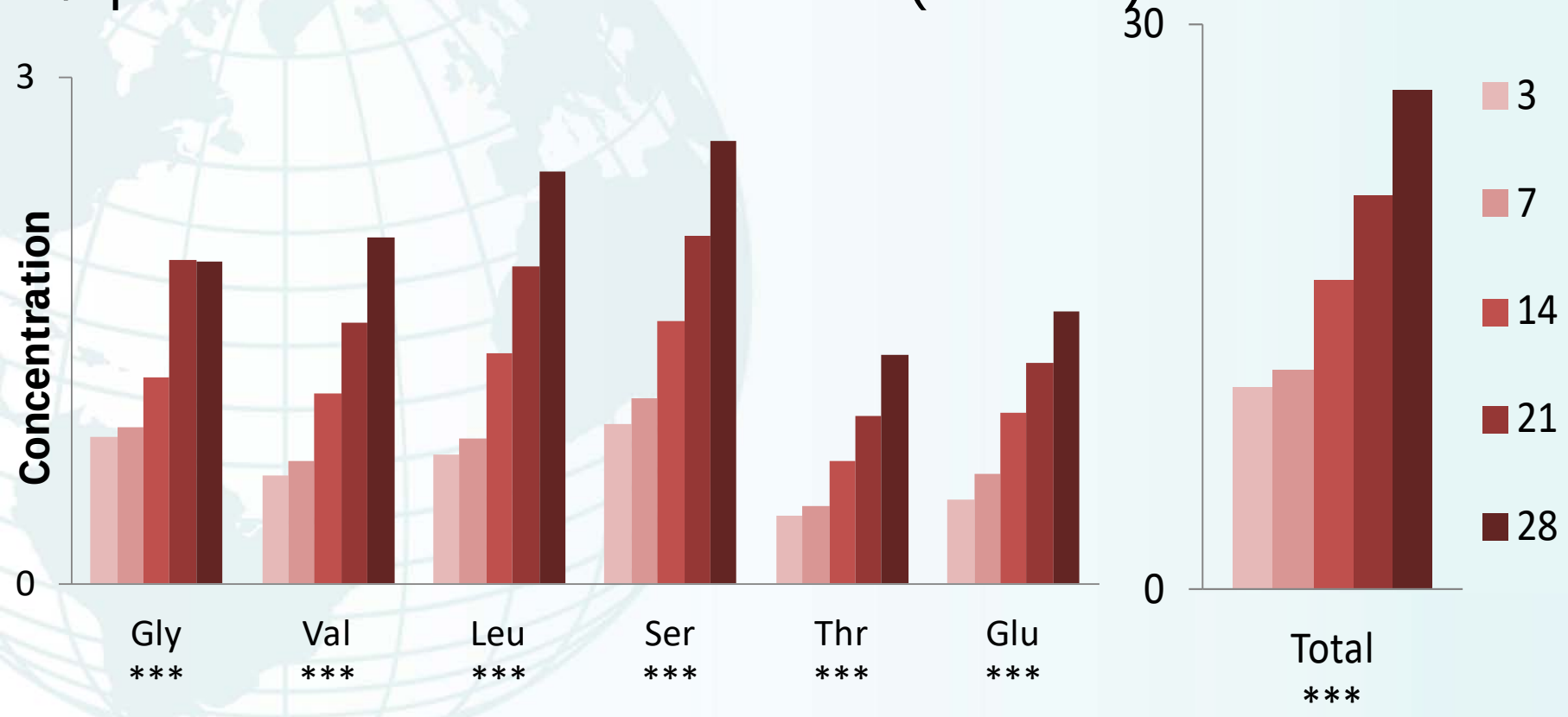


- ↓ IMP (P<0.001).
- ↑↑ Inosine & Hypoxantine.
- Loss of IMP could be linked to Ribose.

AMP > IMP > Inosine > Hx + Ribose

Exp 1:Effect of Ageing on Free Amino Acids

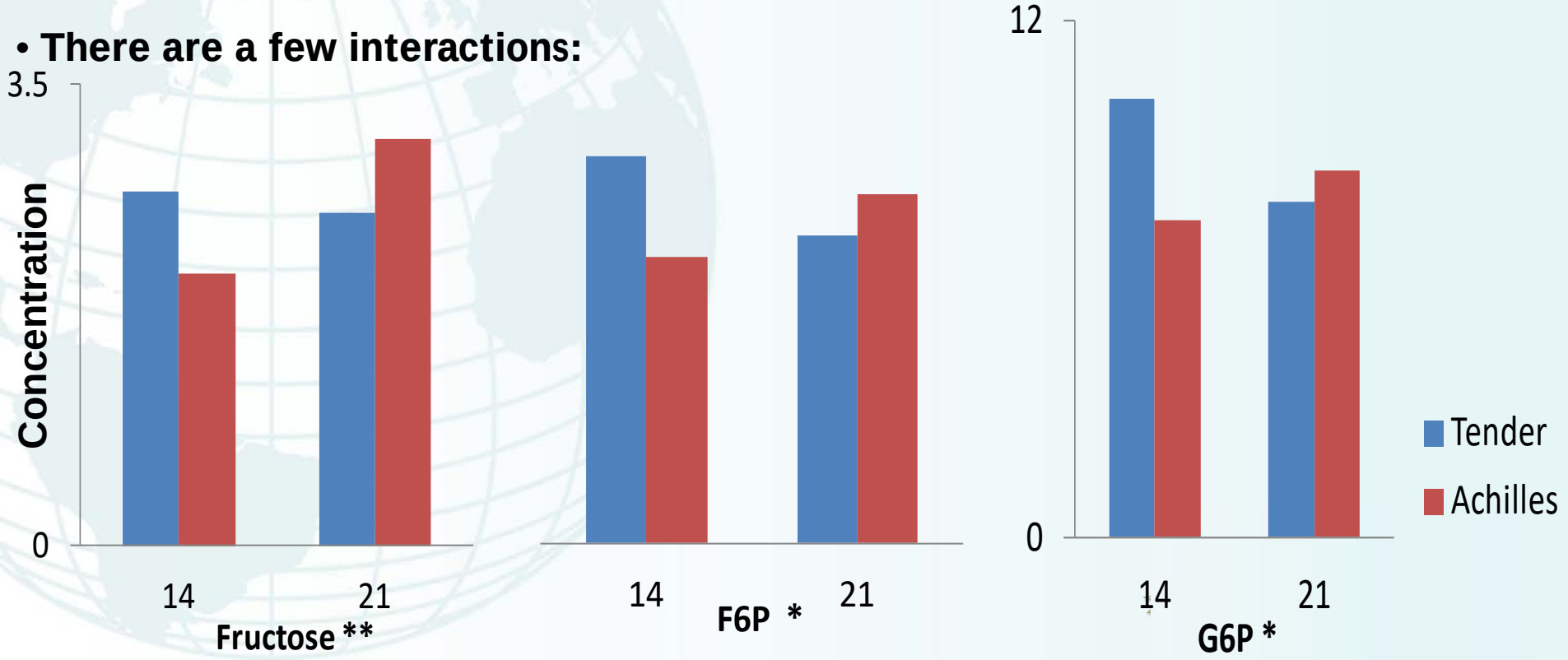
↑Specific & total Free Amino Acids(P<0.001)



Exp 2. Effect of Hanging on Flavour Precursors.

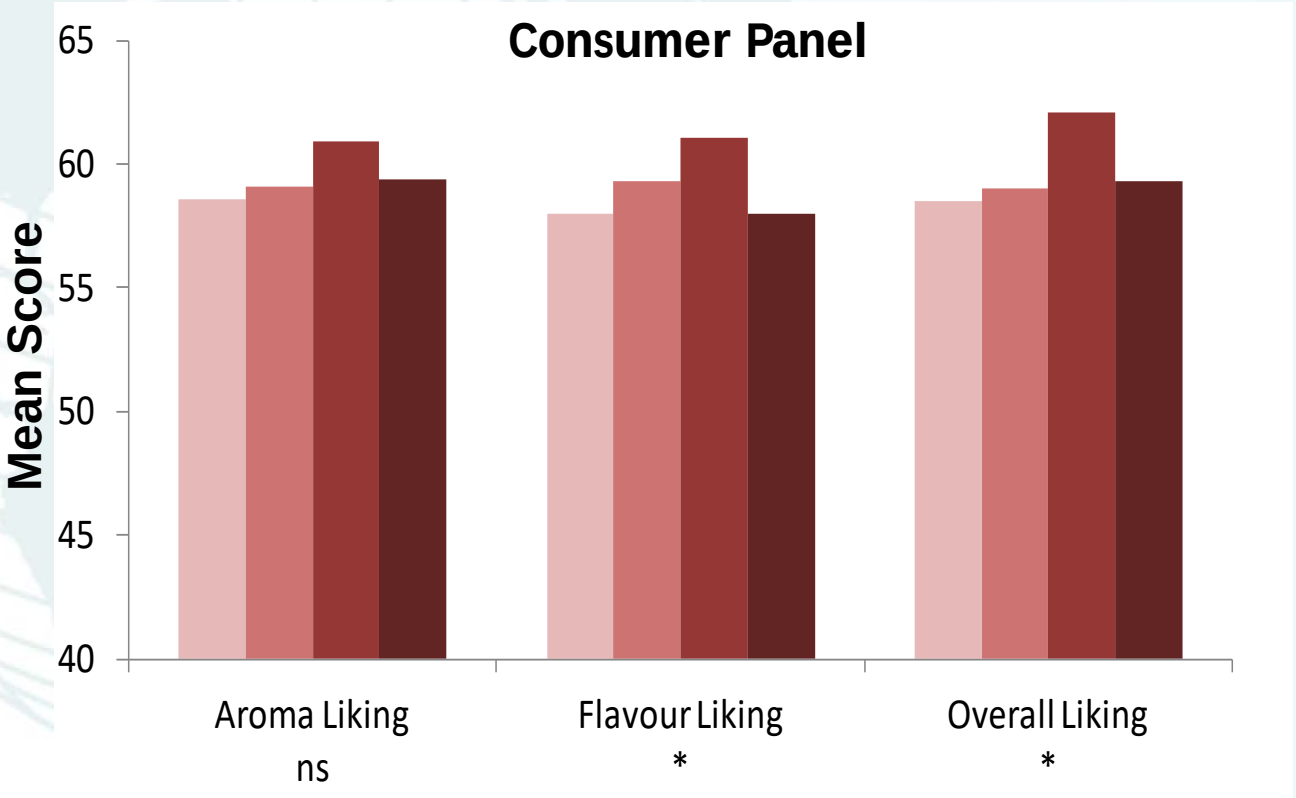
- **Hanging method had no effect on ribonucleotides, free amino acids and most sugars and sugar phosphate content in beef.**

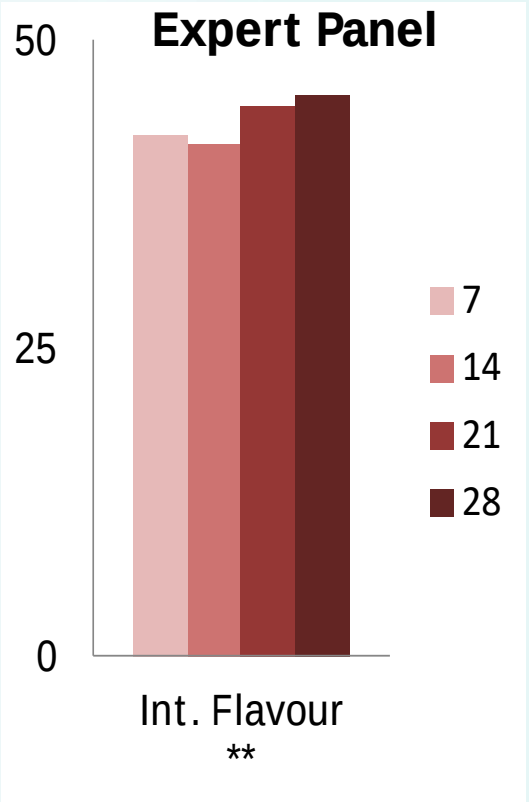
- **There are a few interactions:**



So what??

Ageing increases flavour precursor content, but. Does the consumer notice??





Conclusions

- Ageing significantly increases sugar and free amino acid content in beef.
- Hanging has little or no effect on flavour precursor content in beef.
- Consumer and expert panels confirm the positive effect of ageing on flavour liking, overall liking and intensity of flavour.