

Impact of processing on GI of rice

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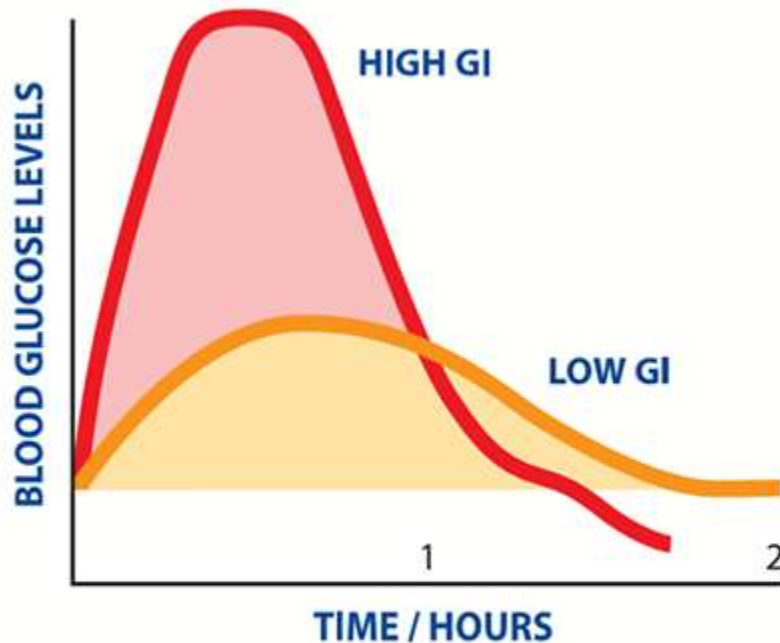
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What is the Glycemic Index?



The amount of carbohydrate in the reference and test food must be the same.

- Ranking of carbohydrates on a scale from 0 to 100
- High GI ✗
- Low GI ✓

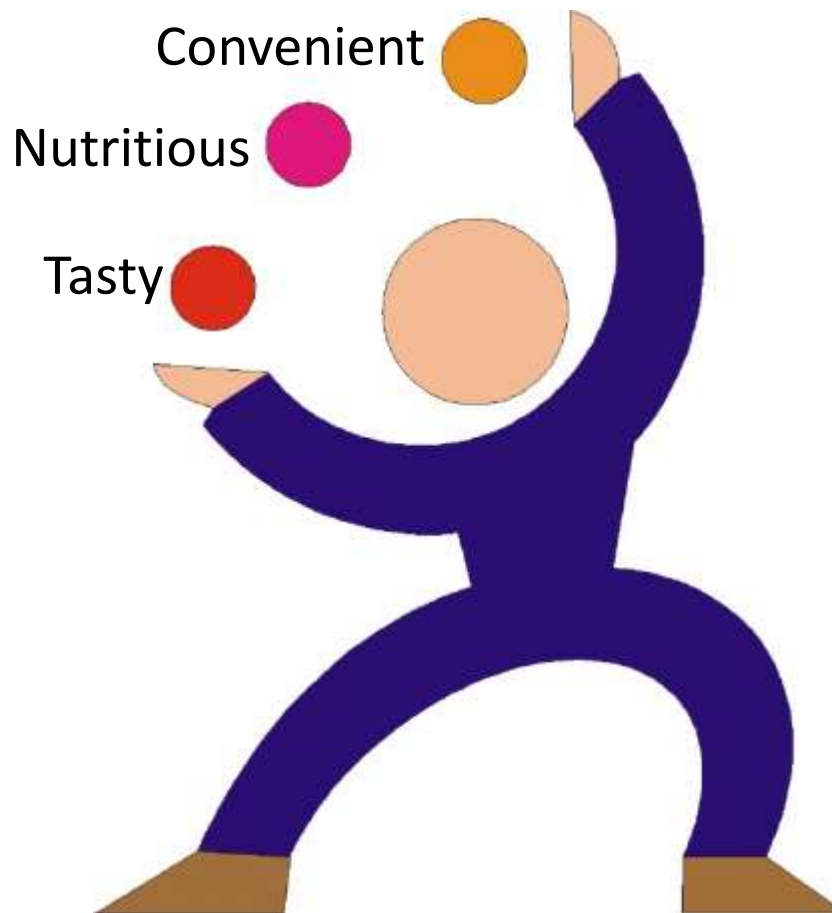


The GI symbol



Current market trends

CHOICE?



Available certified products on the market



Singapore: 55



Bangladesh: 47



Australia: 52-54



Physical processing methods

Degree of milling



Parboiling



HMT (<35 %)
and
ANN (40-55 %)

Critical properties

- *Gelatinisation*
- *Retrogradation*



Aim

To investigate the starch digestibility of rice that has undergone physical processing



Samples



- 4 commercial varieties
 - Unprocessed
 - Processed
- 1 control: Waxy

Type	Sample ID
white	Wh1
white	Wh2
parboiled	Par
brown	Bwn
waxy	Wax



Methodology

- Total starch by Megazyme assay kit (AA/AMG)
- Moisture content by TGA
- Resistant starch
- Grain quality profiling
- Lipid profiling



Methodology cont.

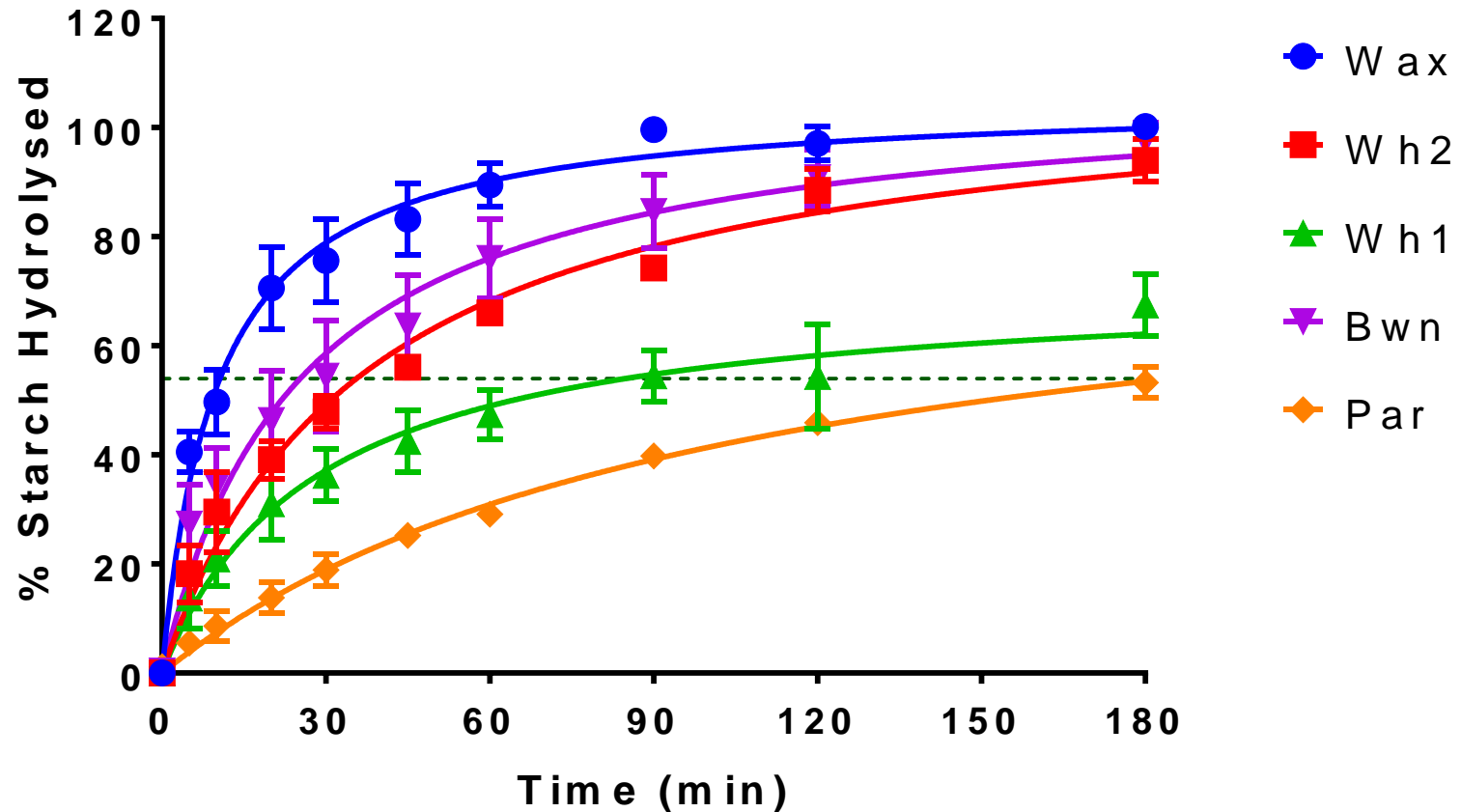
- Alpha-amylase *in vitro* digestion



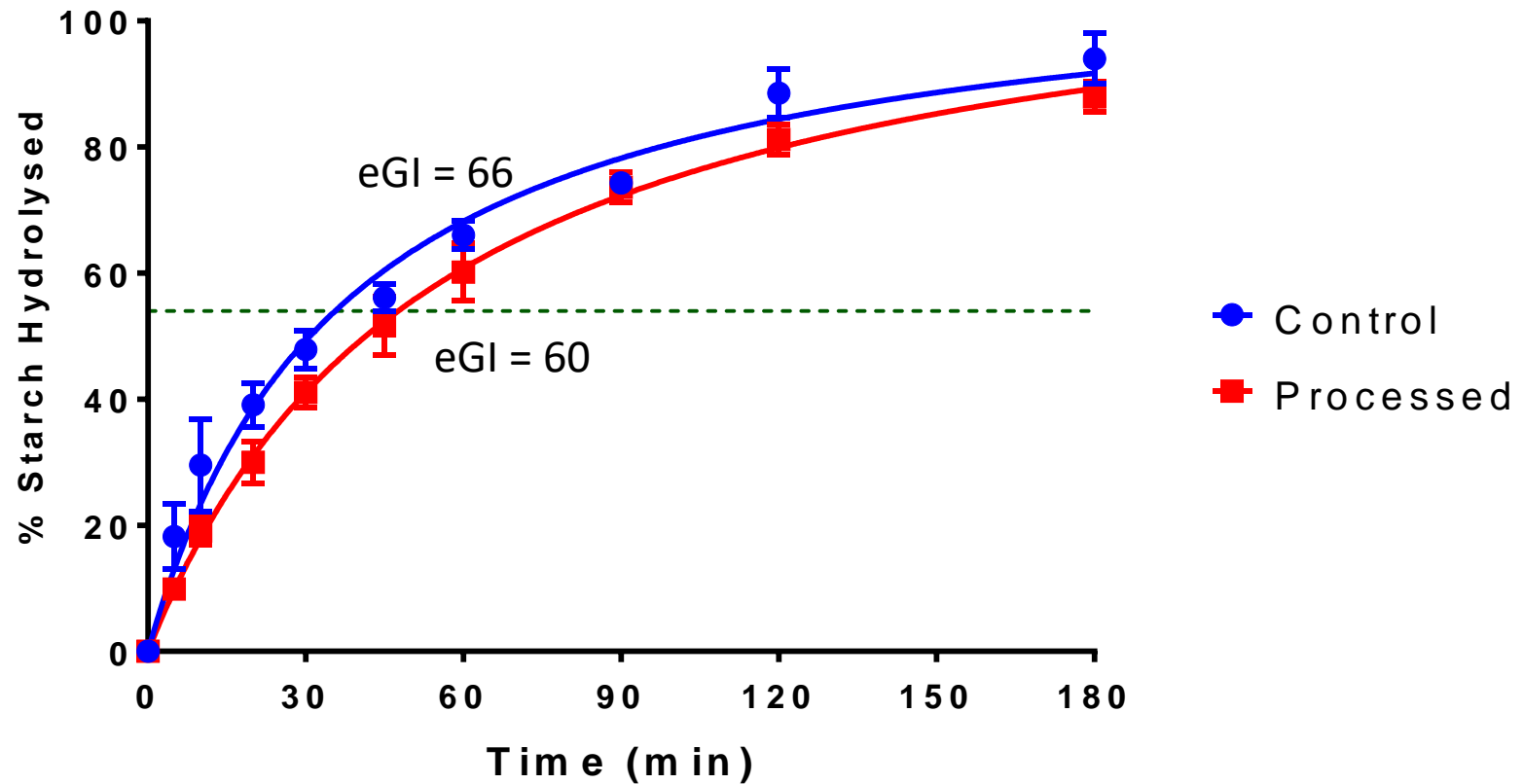
Preliminary Results



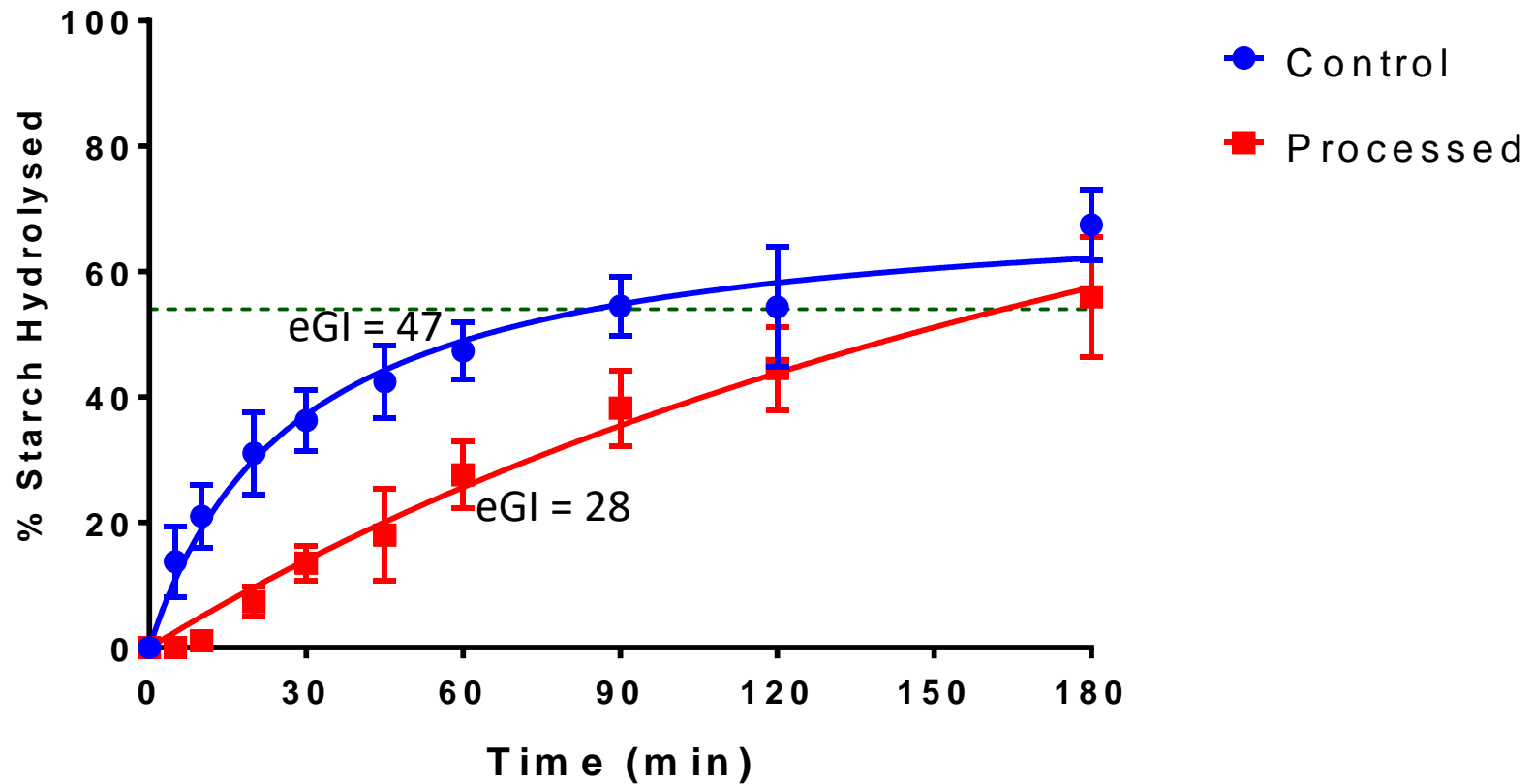
In vitro digestibility of unprocessed samples

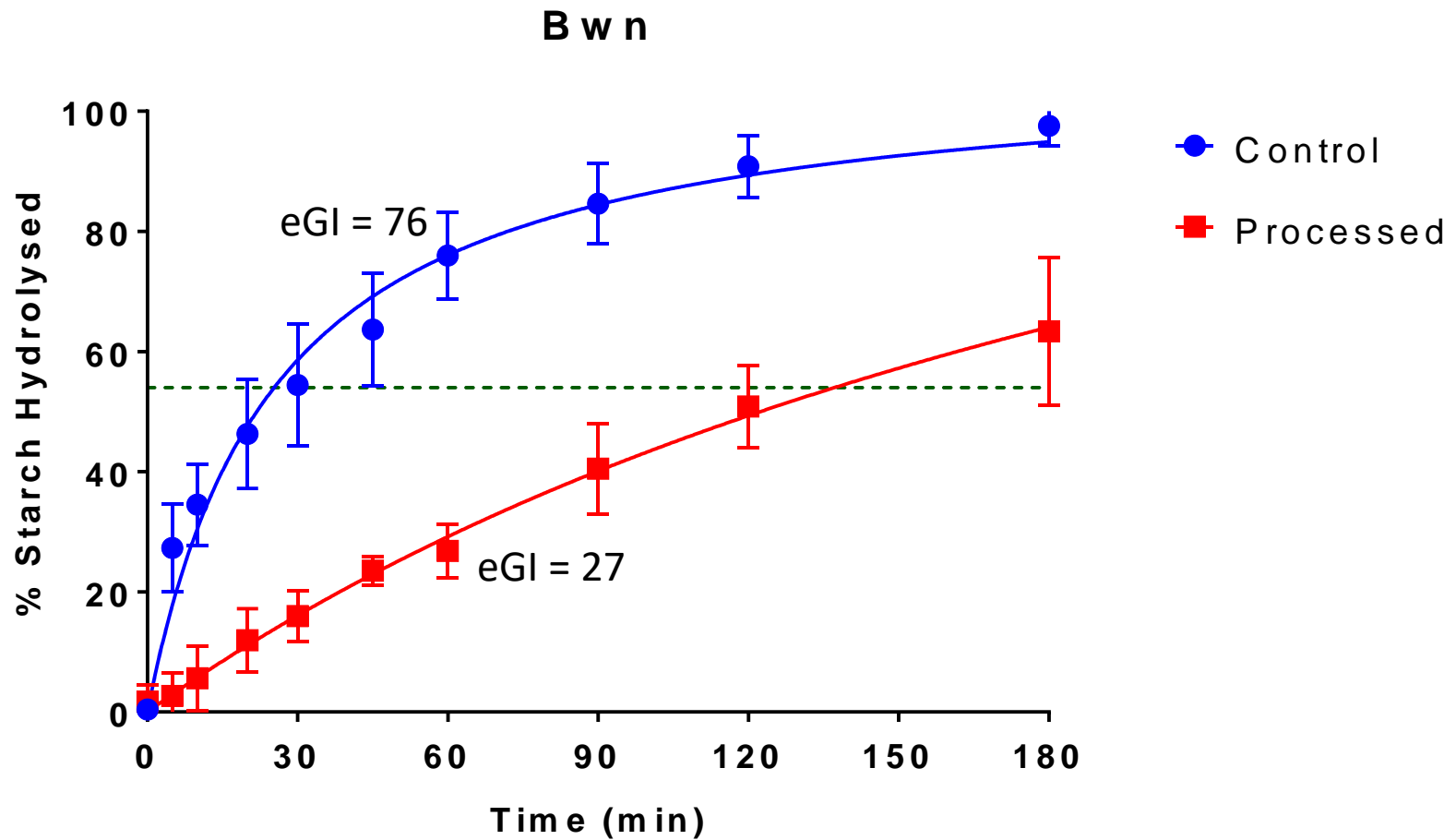


W h 2

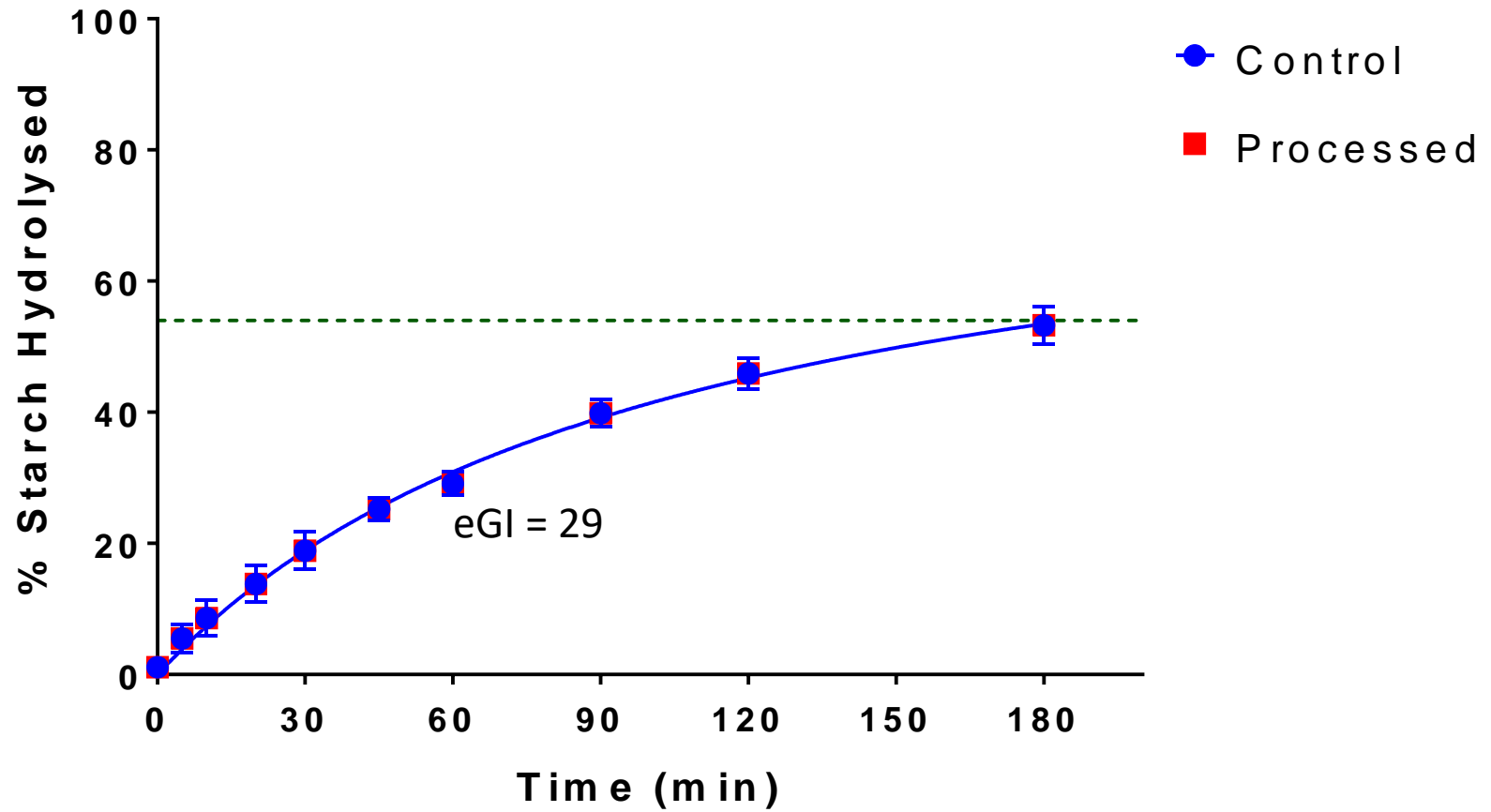


W h 1





Par



Conclusion

- Processing has an impact on starch digestibility
- The digestibility of some rice varieties are more altered by processing than other varieties
- These results may be useful for:
 - Food chemists/ cereal scientists
 - Processors
 - Breeders
 - Consumers



Potential future work

- Grain quality characterization
 - Texture
 - Consumer acceptance
- Understanding the mechanism
 - Structure
 - Amylose and lipid interaction
- Clinical GI testing



Acknowledgements



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- Dr Laura Pallas (Cereal Chemist)
- Dr Rachelle Ward (Cereal Chemist)



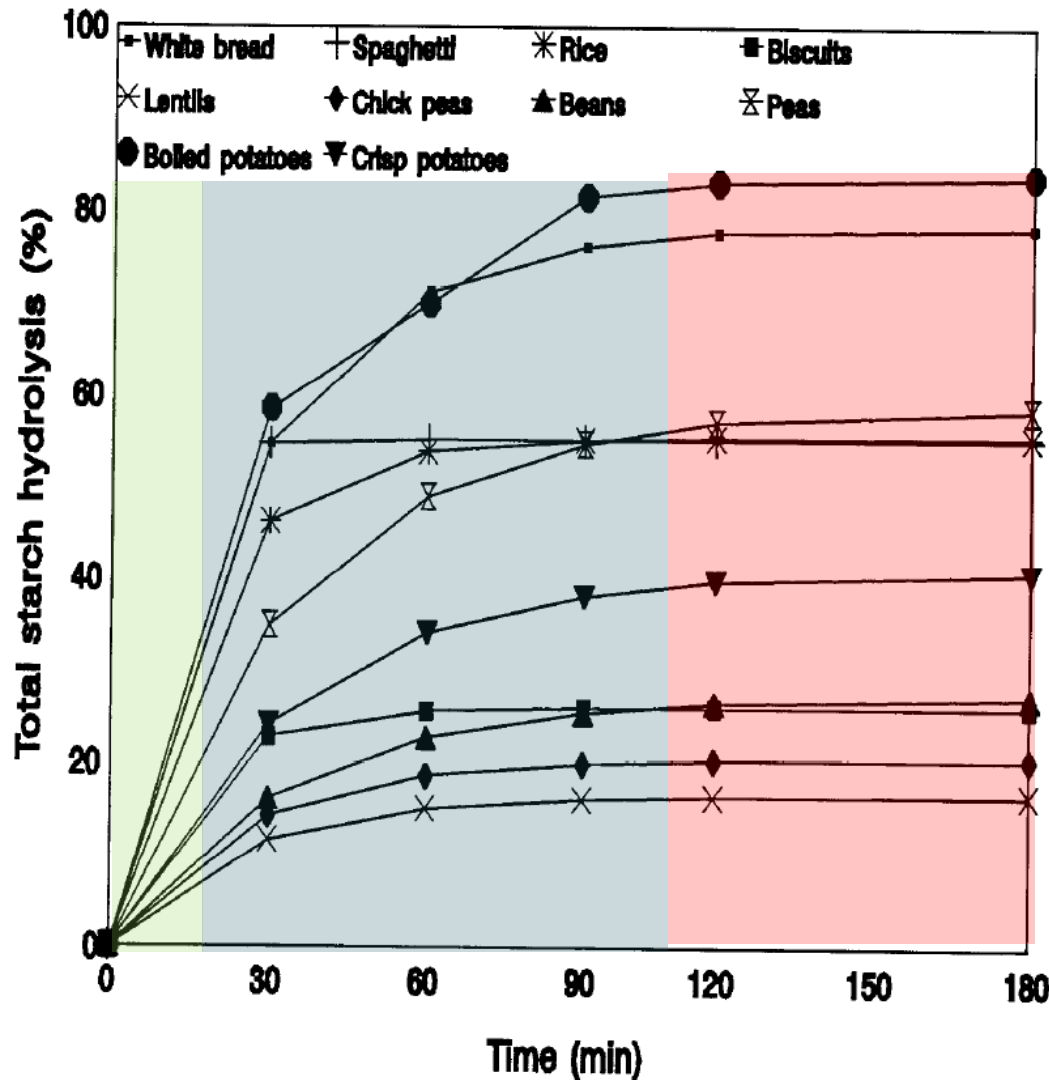
- Dr Dan Waters
(Research Fellow)



Thank you for your time



Measuring starch digestibility



Nutritionally starch is classified according to rate of glucose release and absorption into gastrointestinal tract

- RDS
- SDS
- RS

Figure 1. Total Hydrolysis Rate of starchy foods¹

¹I Goñi, A Garcia-Alonso, F Saura-Calixto. *Nutrition Research*. 17 (1997) 427-437.

