

## Brief

The brief for this product development challenge has been provided by GROENZ requesting the development of a sauce that is pleasing to the Asian palate as they wish to expand their sales to Asia. By following the technological process development resulted in an outcome that combine kiwifruit and feijoa in making a spicy fruity flavoured creamy sauce.

## Specifications:

- Meet target market food legislation requirements
- Halal accredible
- Have 'clean label' declaration - no 'E' numbers
- Stable shelf life
- Easy/quick pour
- Produced under strict HACCP conditions



Team Mellifera.  
Elizabeth Keats and Finn Taylor

## Quality Testing

**BRIX:** The measurement of water activity in a substance. For a more stable shelf life a higher BRIX is preferable. We measured our sauces BRIX at the GROENZ factory when it was in the earlier stages of development. It was lower then we wished it to be and so tried to be aware of what would and would not effect the BRIX for the rest of the development process. Our ultimate aim was to develop the formula to an acceptable BRIX level.



Figure 7 shows us testing the BRIX.

## Research

Key knowledge taken from research

- Researched data gave good indication of the poularity of kiwifruit in China showing how the Chinese palete enjoys its flavour. Data could be applied to Singapore wich has a rich Chinese culture



Fig 2 MPI data of export of gold kiwifruit to China indicating the popularity of kiwifruit.

- In the last few years QSRs have been booming in Singapore and people have become more likely to eat out

Have you eaten out in restaurants and on-the-go more often this past year than in the previous two years?

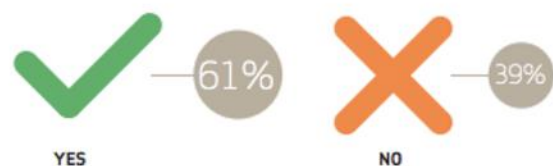


Fig 3 & 4 Establishment of fast food chains in Singapore

- Seasonality of a key ingredients we were using made the development of this sauce potentially cause our sauce to be unmakable large scale. Profruits Gold kiwifruit juice concentrate and Heathers Feijoas, concentrated feijoa puree solved the issue

## Development Process

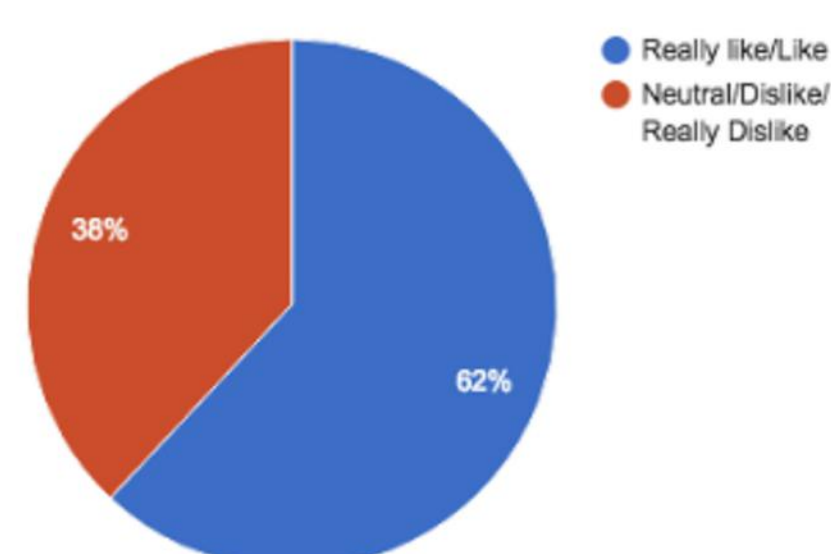
Issues that we encountered were:

- Accesing bulk produce; This problem was solved by purchasing pre-processed puree and juice because it will be a better option for GROENZ



- Waste Reduction; curbed by purchasing the pre-processed puree and juice as it eliminates the use of fresh products wich ultimately reduces time, energy and food wastage

Results from the open evening.

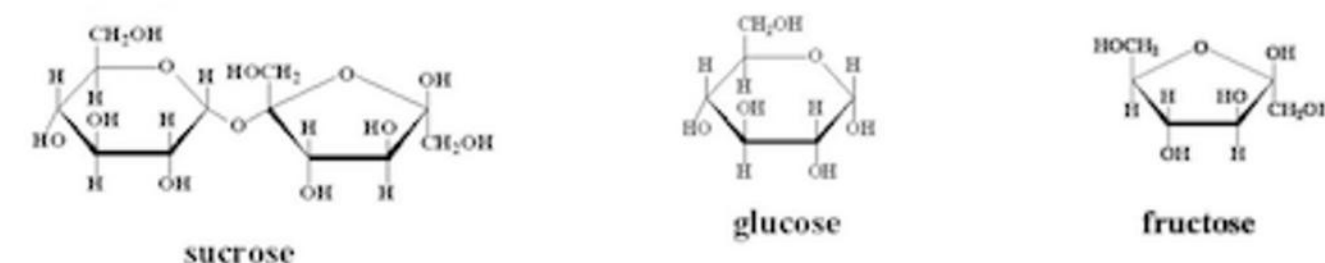


- Optimising the formula; this included trialing the components affecting spiciness, acidity and sweetness. Sensory evaluations were conducted on over 150 people. This showed that we have achieved a high percentage of acceptability. We had 62% of people "really like/like" the product



## Sugar Crystallisation:

Corn syrup is an effective inhibitor of crystallisation, an issue important in the development of the kiwifruit and feijoa sauce. When heated the various glucose chains tangle and obstruct the movement of the sugar and water molecules making them find it harder to find a crystal to fit in.



## Testing for optimum temperature:

There was no difference in viscosity when heated between 70°C-80°C and at 100°C it sets solid. For the optimal formula it was agreed that 75°C would kill Lysteria, and not effect the texture and viscosity.



Fig 9, Liquid glucose after being heated to the temperatures; 72°C, 80°C, 100°C and 150°C.

## Stage gate decision:

Final sensory testing indicated a harshness not acceptable to the wider market. Prior research indicated a preference for creamy sauces specifically hollandaise. This issue was resolved by marrying some of the GROENZ hollandaise sauce with the kiwifruit and feijoa sauce. Sensory results were in favour of the new formula plus it is standard practice for GROENZ to sometimes develop new sauces that include use pre-existing sauces as a base.

Comparison between 134 and 849

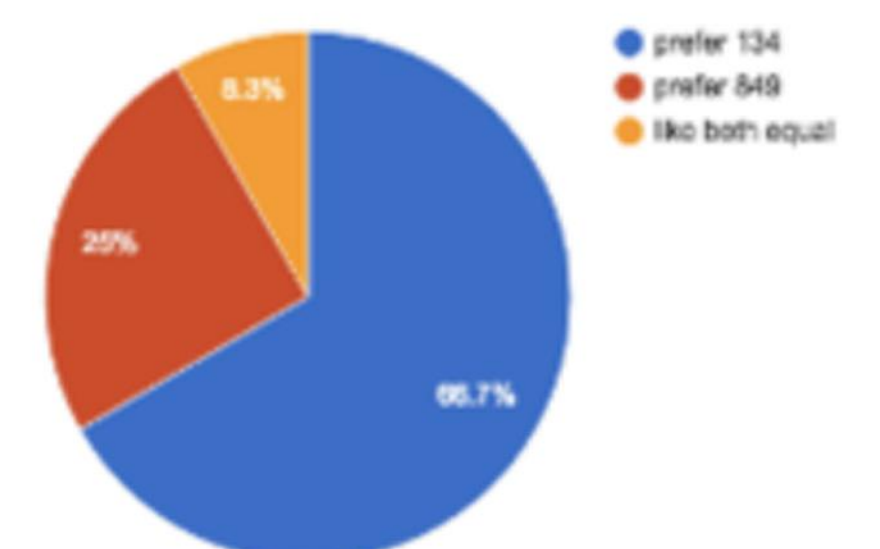


Fig 10, 66.7% preferefered the original sauce mixed with the hollandaise sauce leading us to decide on this as our final concept.

## Packaging

Initial brief required limited packaging development because in industry they package in plastic satchels or pottles.



A version of the pottle size label we developed on the right based on the current GROENZ packaging gor Mc Donald's sweet 'n' sour sauce.



## Conclusion

In conclusion we developed a sauce that pleases the Asian palate and sensors. It includes golden kiwifruit and feijoa, as well as the GROENZ hollandaise sauce. This sauce fulfils most of the specificationss and has been tested on approx. 200 people over the whole process. This proved that the final outcome is socially acceptable. It also meets pH specifications and viscosity specifications that makes it fit for purpose in the physical environment.

## Acknowledgements

We would like to thank all mentioned below for their support: Sophie Shaw and GROENZ company our mentor and an invaluable source of information. Teresa Calman from DS Hall for Sponsoring of our project. Our teachers Marietjie van Schalkwyk and Natalie Randall for their help and expertise in both CREST and Food Technology. Jenny Dee (NZIFST) and Jessie McKenzie (the NZ Royal Society), joint co-ordinators of the NZIFST CREST student product development challenge. Nigel Hanton: The Principal of WHS, in being generous in his support of the CREST project.

