

Sensory profiling and consumer acceptability of Burdekin plum fruit leather

Gengning Chen ¹, Sandra M Olarte Mantilla ¹, Yasmina Sultanbawa ¹

¹ARC Industrial Transformation Training Centre for Uniquely Australian Foods, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, Indooroopilly, QLD, Australia

Introduction

Burdekin plum (BP) *Pleiogynium timoriense*

A tree native to Australia, belongs to the same family as Mangoes. Fruits taste sour and astringent with a thin layer of flesh and a large stone. Fruits are traditionally consumed by Indigenous Australians, rich in fiber and antioxidants. While there is limited research into its potential food applications.

There is increasing demand for healthy snack from consumers. This study proposed the development of fruit leathers as a value add to this underutilised fruit to capitalise on the increasing demand for healthy snacks.

Considering the importance of sensory quality in determining consumer acceptability of foods and the changes in sensory perceptions and likings when foods are combined together, this study aims to process Burdekin plum into fruit leathers with the addition of apple, to evaluate the sensory characteristic of BP leathers and to evaluate consumer acceptability of BP leathers and its combination in trail mix.

Experimental design

BP puree was blended with apple puree (0 to 80% levels) to make five formulations of BP fruit leathers (100BP, 80BP, 60BP, 40BP, 20BP)

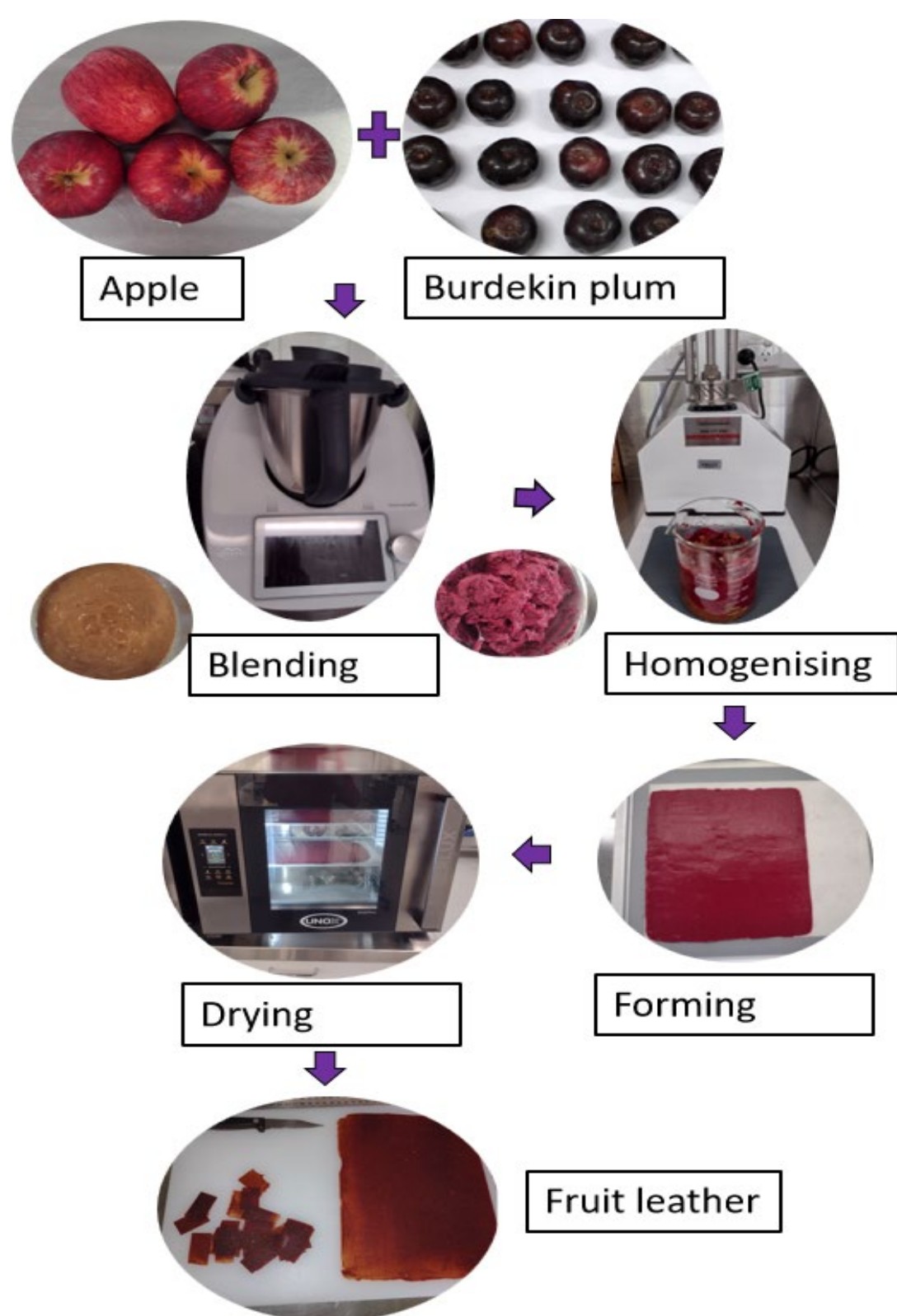


Figure 1: Flowchart of Burdekin plum leather processing

Five formulations of BP leathers were subjected to sensory descriptive analysis under green light and preliminary acceptability test to select the preferred formulation. Then BP leather was incorporated in commercial trail mix to assess the consumer acceptability.

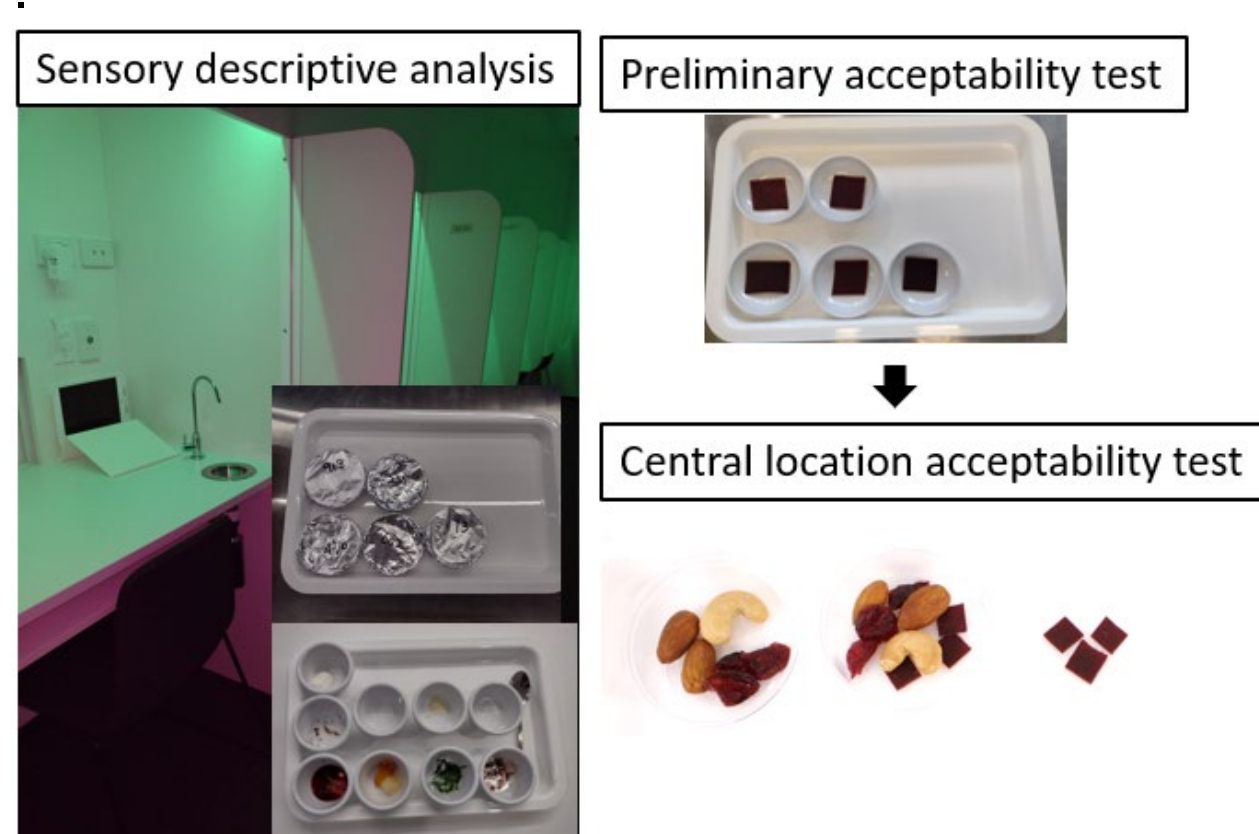


Figure 2: Sensory evaluation conducted for BP leathers

Result

Descriptive sensory analysis

- 80BP and 100BP were similar and characterised by significantly higher *dark fruit flavour*, *astringency*, and *firmness* than 20BP. While 20BP fruit leather was significantly higher for *cooked yellow fruit flavour* and *dissolving texture*
- Most attributes were highly correlated

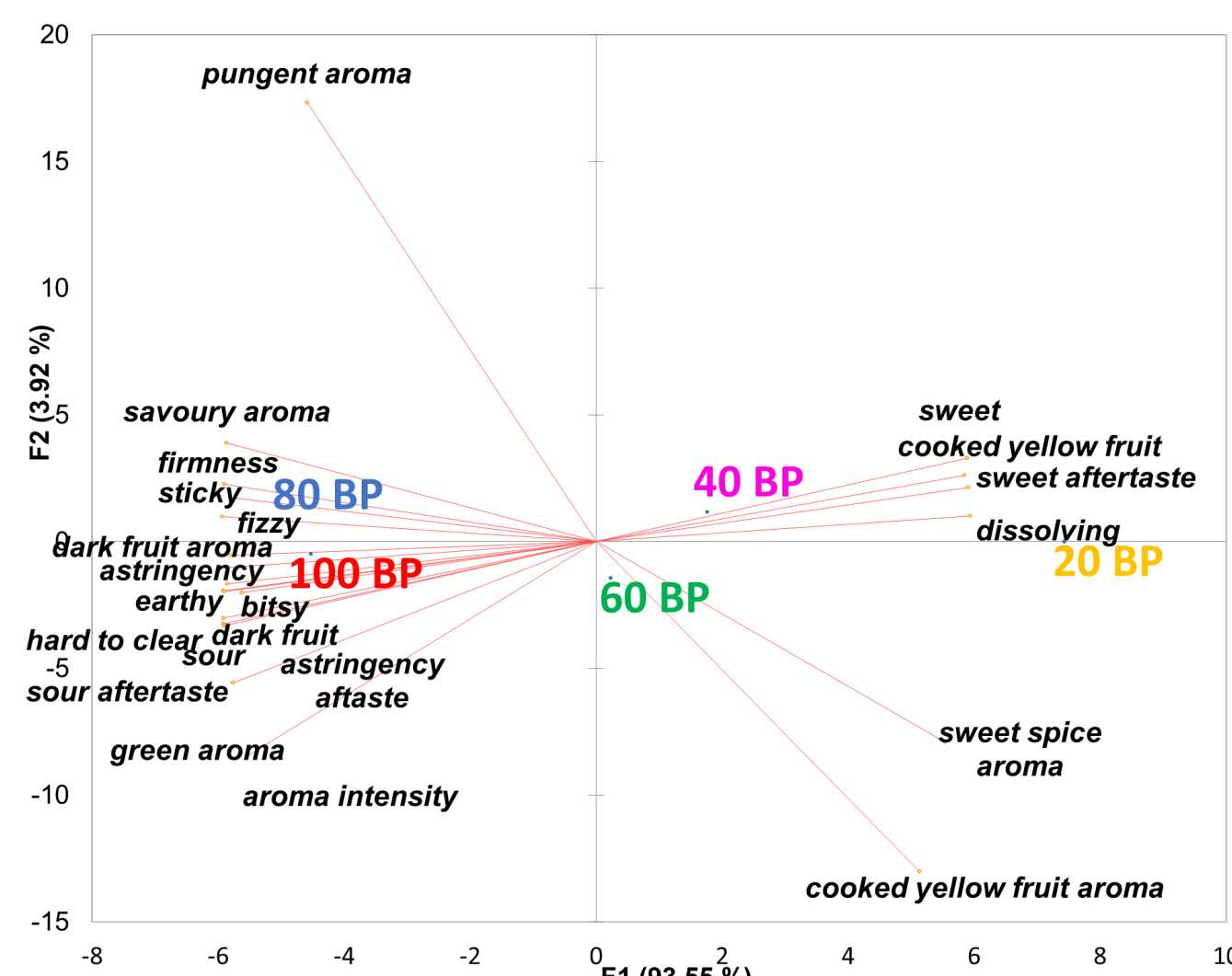


Figure 3: PCA bi-plot of the sensory properties of Burdekin plum leathers (n=11) (20BP to 100BP correspond to leathers containing Burdekin plum from 20 to 100% in the formulation)

Preliminary acceptability test

- 20BP, 40BP and 60BP were preferred than 80BP and 100BP
- The flavour, texture and overall liking scores increased with increasing proportion of apple addition in leather formulations
- 40BP was selected for consumer test considering its sensory attributes, acceptability and cost

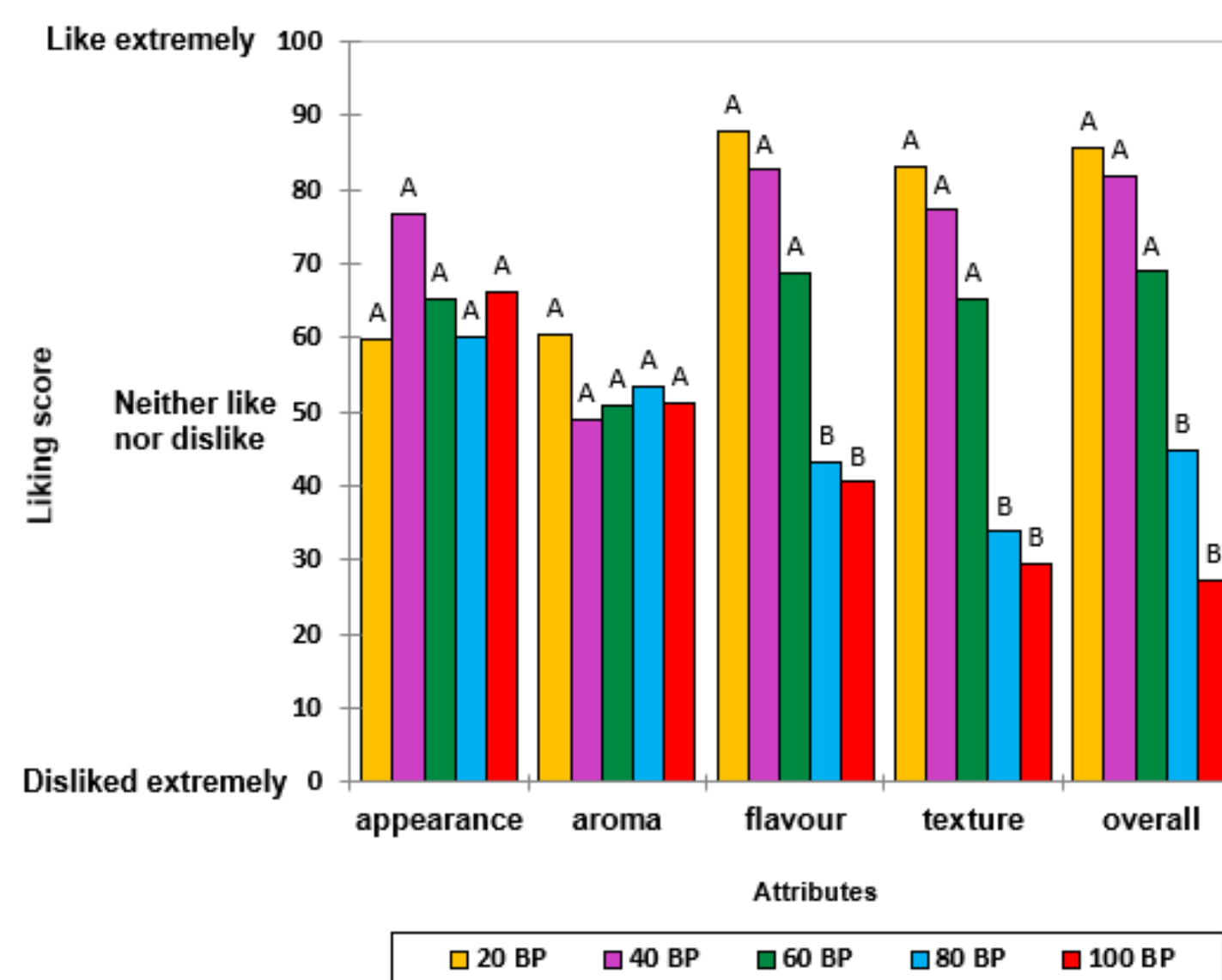


Figure 4: Acceptability of Burdekin plum leathers (n=12) Data without a common letter indicate significant difference between samples for Tukey (HSD) at $p < 0.05$

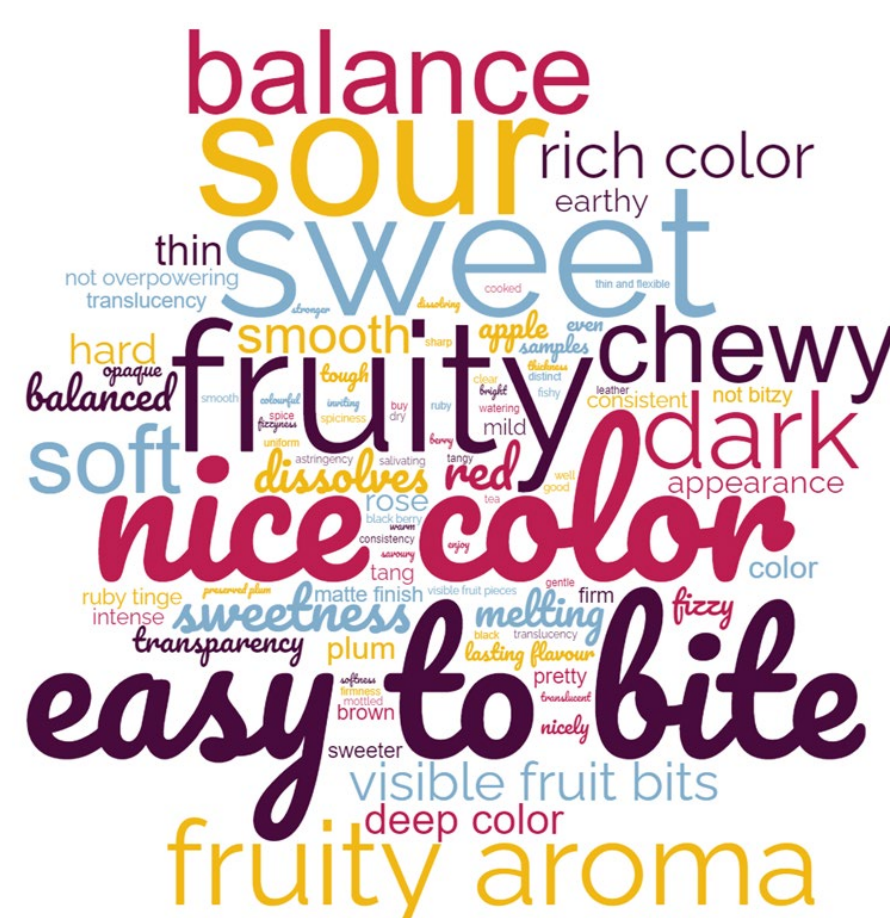


Figure 5: Word clouds of like comments of five Burdekin plum leathers (n=12)

Central location consumer acceptability test

- All three samples were liked
- Consumer acceptability of trail mix containing BP leather was comparable to the commercial trail mix
- Adding BP leather to trail mix can improve acceptability compared to BP leather served alone

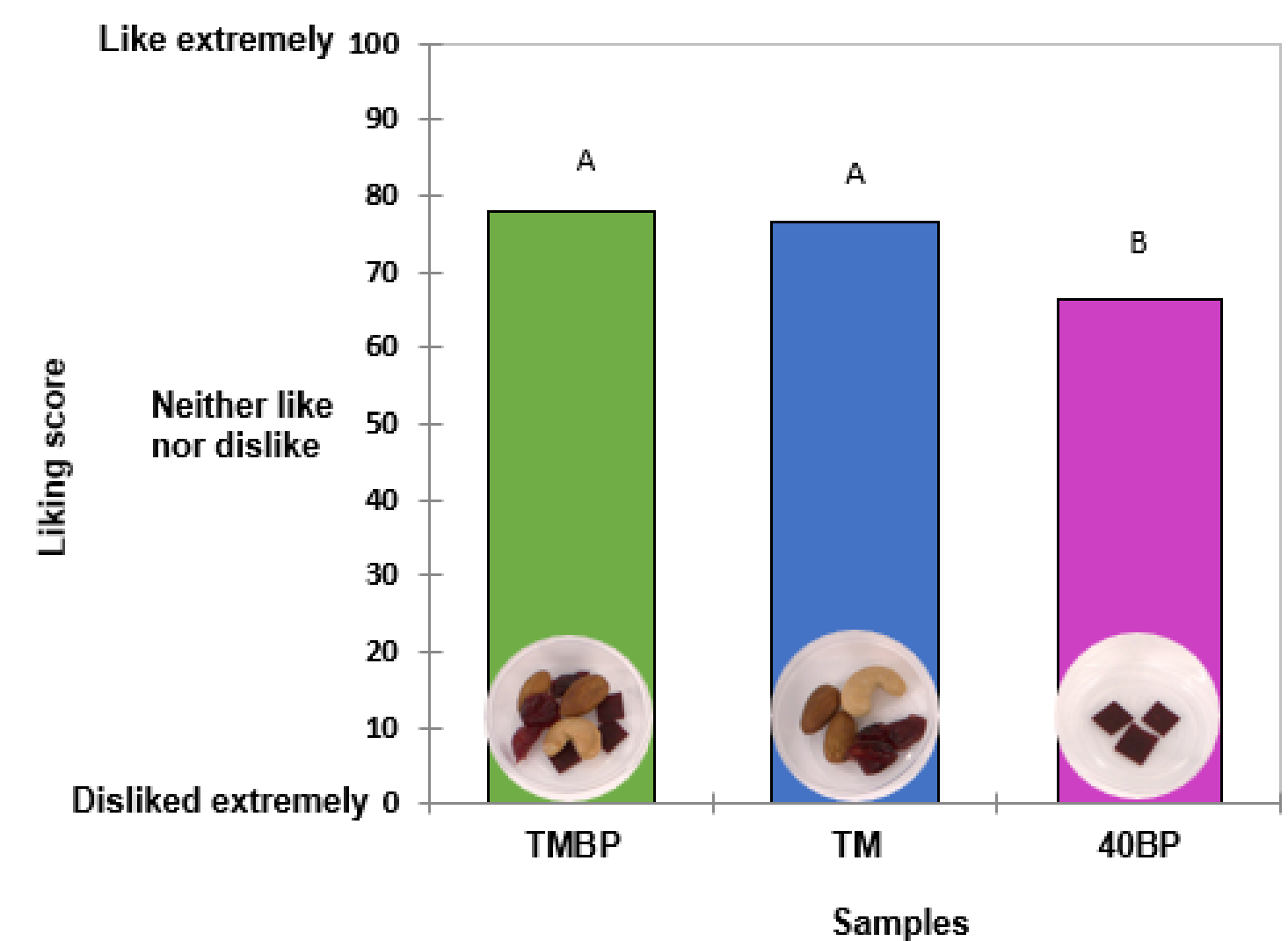


Figure 6: Mean overall liking of fruit leather, trail mix and their combination (n=121), Data without a common letter indicate significant difference between samples for Tukey (HSD) at $p < 0.05$

40BP: Burdekin plum leather made with 40% apple, TM: commercial fruit and nut trail mix, TMBP: commercial fruit and nut trail mix with added 40BP.

Conclusion

- Sensory descriptive analysis showed 20% addition of apple did not significantly affect the sensory attributes of Burdekin plum leathers. When apple addition reached 80%, significant changes in 19 sensory attributes were observed
- Preliminary acceptability taste test revealed 20BP, 40BP and 60BP were preferred than 80BP and 100BP
- Consumer acceptability of BPTM was comparable to the TM, which was higher than 40BP consumed alone
- Processing Burdekin plums into fruit leathers with the addition of apple is a feasible way of its food application
- Serving BP leather in trail mix can improve its consumer acceptability and this is a promising way to incorporate BP leather into more familiar snacks

Future directions

- To design packaging for fruit leathers and its combination in trail mix
- To determine the shelf life of fruit leathers and its combination in trail mix
- To conduct pilot plant fruit leather production in community

References

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