Table 3. Amount sugar (mg) and percent sugar (w/w) for each of the three syrups analyzed. Amounts are based on the average of three injections.

SYRUP A; SAMPLE WEIGHT: 637.1 mg		
Analyte	**Amount (mg)**	**Percent Sugar (w/w)**
Fructose	Trace	n/a
Sucrose	Trace	n/a
Glucose	338.19	53.08
SYRUP B; SAMPLE WEIGHT: 886.6 mg		
Analyte	**Amount (mg)**	**Percent Sugar (w/w)**
Fructose	Trace	n/a
Sucrose	Trace	n/a
Glucose	477.71	53.88
SYRUP C; SAMPLE WEIGHT: 831.41 mg		
Analyte	**Amount (mg)**	**Percent Sugar (w/w)**
Fructose	53.46	6.43
Sucrose	45.95	5.53
Glucose	350.91	42.21

Based on standard calibration, the quantitative results for each syrup sample are shown in Table 3. When analyzed, Syrups A and B both only contained a quantitative amount of sucrose. Although trace amounts of both fructose and glucose were observed, they were below the limit of detection, and were not considered in any of the calculations. Syrup C contained much higher concentrations of fructose and glucose compared to Syrups A and B. This is most likely due to the apples used in the production of the syrup. Interestingly, the total percent sugar by weight for Syrup C was 54.17%, closely matching the other two maple syrups which were based only on the amount of sucrose.

Conclusion

This work has demonstrated the fast and robust chromatographic separation and quantitation of four sugars using a PerkinElmer LC 300 HPLC system with RI detection. The results exhibited very good retention time repeatability, as well as excellent linearity over the tested concentration ranges. The method also affords LOQs of ≤ 0.1 mg/mL for most analytes.

This work specifically focused on the sugar analysis of three different syrups, two maple syrups from a local grocery store and one spiced apple syrup from a local farmer's market. The method allowed for the identification of specific analytes contained in each of the syrup samples, as well as comparing their sugar profiles, both chromatographically and quantitatively.

References

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