



Fruit juice versus sugar-sweetened beverages

Key points

- Sugar-sweetened beverages and 100% fruit juice (FJ) can have similar sugar contents, but otherwise have very different nutritional profiles.
- Unlike sugar-sweetened beverages, FJ is a source of micronutrients and polyphenols and contains pectin, a dietary fibre.
- Sugar-sweetened beverages are typically classed as moderate glycaemic index, while most FJs are low glycaemic index.
- In studies, sugar-sweetened beverages typically have a negative effect on type 2 diabetes risk and weight control, while FJ has a neutral or beneficial effect at moderate intakes.

Nutritional value

FRUIT JUICE AND CARBONATED SOFT DRINKS ARE NUTRITIONALLY DIFFERENT



	150mL serving of orange juice	330mL serving of a carbonated soft drink
Vitamin C	75mg	0mg
Potassium	264mg	3.3mg
Folate	32mg	0mg
Polyphenol (hesperidin)	78mg	0mg
Pectin (soluble fibre)	50mg	0mg
Glycaemic Index (GI)	48 (LOW)	63 (MEDIUM)
Sugars	14g (NATURAL)	35g (ADDED)

Refs: de Ryker (2020) Proc Nutr Soc 79(OCE2) E320; Salar (2024) Int J Food Sci Nutr, in press.

Sugars

Sugar-sweetened beverages and FJ typically have a similar sugar content of around 8-10g per 100mL¹. The sugars in FJ are naturally occurring and come from the squeezed whole fruit used to make it. In contrast, the sugars found in sugar-sweetened beverages are mostly added. Per serving, the sugar content of sugar-sweetened beverages can be double that found in a typical 150mL glass of FJ. Despite similar sugar contents, carbonated sugar-containing beverages have an average glycaemic index of 63, classifying them as medium glycaemic index (GI). However, both fruits and FJ are classified as low GI. According to a 2021 systematic review, the average GI for fruit is 51 while it is 47 for fruit and vegetable juices².

Micronutrients

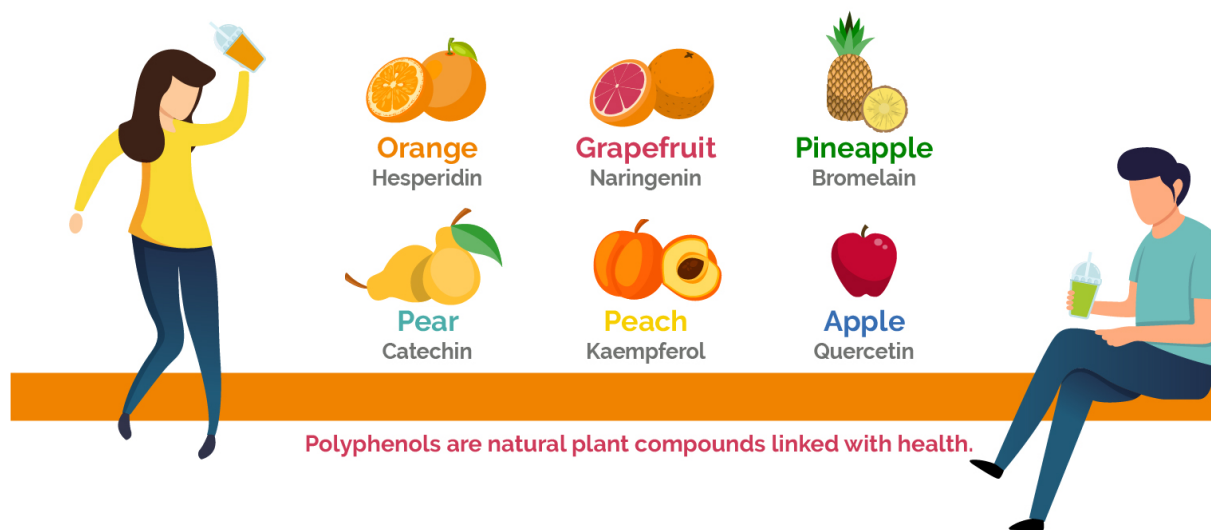
Since FJ reflects the vitamin and mineral content of the whole fruit from which it is made, it is considered to be nutritionally dense. Orange juice, for example, is rich in vitamin C and typically a source of potassium and folate. Other types of FJs are rich in vitamin C and may be a source of vitamins and minerals depending on their constituent fruits. In contrast, sugar-sweetened beverages contain negligible amounts of micronutrients unless added.

Polyphenols

Polyphenols are bioactive compounds found naturally in plant foods. There are thousands of different types which provide plants with protection from pests, disease, climate and the sun. They have also been associated with benefits for human health³. FJ contains a similar level of polyphenols to the whole fruit it is made from while sugar-sweetened beverages contain no natural polyphenols.

DIFFERENT POLYPHENOLS FOR DIFFERENT JUICES

Did you know fruits and their juices contain a wide range of polyphenols?



Current research

Evidence from both clinical trials and observational studies point to differences in the metabolic health effects of sugar-sweetened beverages and FJ. These need to be considered alongside major differences in consumption in Europe. Across all age groups, the intake of sugar-sweetened beverages far exceeds that seen for FJ with the most marked differences seen in adolescents^{4,5}.

Observational studies

An observational study published in 2024 found that early childhood exposure to sugar-sweetened beverages was associated with a higher fat mass and body mass index in adulthood, whereas early exposure to apple juice was associated with lower fat mass in females⁶. A systematic review and meta-analysis of 13 studies found an adverse linear association for sugar-sweetened beverages indicating a greater risk of metabolic syndrome with increasing intake. In contrast, a protective signal for FJ was seen when consumed regularly at moderate doses⁷.

Another study with 35,000 participants found that substituting FJ for sugar-sweetened beverages was linked with a lower risk of cardiometabolic disease⁸. The authors concluded, “Based on this study, we found that pure fruit juice is not comparable to sugar-sweetened beverages in relation to cardiometabolic risk, despite their similar sugar content.”

Randomised controlled trials

Intervention trials in humans have also found differences between the two drinks. For example, a randomised controlled trial in 26 healthy adults found that two weeks of daily orange juice intake led to a more favourable metabolic profile than consumption of the same amount of a sugar-sweetened beverage⁹.

A systematic review and meta-analysis which included 5086 participants concluded that certain food groups, including sugar-sweetened beverages, had ‘harmful effects’ on glycaemic control when tested in substitution studies¹⁰. In contrast, both fruits and FJ were reported as offering beneficial effects in energy-matched substitutions in the diet.

Conclusion

FJ and sugar-sweetened beverages may have a similar sugar content, but otherwise are different drinks in nearly every way. Whereas sugar-sweetened beverages are high in added sugars with few micronutrients to offer, FJ contains naturally occurring fruit sugars and useful amounts of key micronutrients such as potassium, vitamin C and folate, as well as polyphenols. Research has found clear detriments to health when people have high intakes of sugar-sweetened beverages. On the contrary, there are potentially beneficial or neutral effects when FJs are included in the diet.

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References

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