

## **Comparison of antioxidant potency of commonly consumed polyphenol-rich beverages in the United States.**

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A number of different beverage products claim to have antioxidant potency due to their perceived high content of polyphenols. Basic and applied research indicates that pomegranate juice (PJ), produced from the Wonderful variety of *Punica granatum* fruits, has strong antioxidant activity and related health benefits. Although consumers are familiar with the concept of free radicals and antioxidants, they are often misled by claims of superior antioxidant activity of different beverages, which are usually based only on testing of a limited spectrum of antioxidant activities. There is no available direct comparison of PJ's antioxidant activity to those of other widely available polyphenol-rich beverage products using a comprehensive variety of antioxidant tests. The present study applied (1) four tests of antioxidant potency [Trolox equivalent antioxidant capacity (TEAC), total oxygen radical absorbance capacity (ORAC), free radical scavenging capacity by 2,2-diphenyl-1-picrylhydrazyl (DPPH), and ferric reducing antioxidant power (FRAP)]; (2) a test of antioxidant functionality, that is, inhibition of low-density lipoprotein (LDL) oxidation by peroxides and malondialdehyde methods; and (3) evaluation of the total polyphenol content [by gallic acid equivalents (GAEs)] of polyphenol-rich beverages in the marketplace. The beverages included several different brands as follows: apple juice (3), açai juice (3), black cherry juice (3), blueberry juice (3), cranberry juice (3), Concord grape juice (3), orange juice (3), red wines (3), iced tea beverages (10) [black tea (3), green tea (4), white tea (3)], and a major PJ available in the U.S. market. An overall antioxidant potency composite index was calculated by assigning each test equal weight. PJ had the greatest antioxidant potency composite index among the beverages tested and was at least 20% greater than any of the other beverages tested. Antioxidant potency, ability to inhibit LDL oxidation, and total polyphenol content were consistent in classifying the antioxidant capacity of the polyphenol-rich beverages in the following order: PJ>red wine>Concord grape juice>blueberry juice>black cherry juice, açai juice, cranberry juice>orange juice, iced tea beverages, apple juice. Although in vitro antioxidant potency does not prove in vivo biological activity, there is also consistent clinical evidence of antioxidant potency for the most potent beverages including both PJ and red wine.