



## Cranberries, Health, & the Microbiome

As the US enters the winter months, a slew of regional and national holidays are under preparation. Thanksgiving, a annual feast, is particularly notable for its use of root vegetables, seasonal game, and gravy. A staple of this Thanksgiving feast, at least in New England, is the cranberry. Cranberries and, more commonly, cranberry juice, has long been touted as promoting 'good health'. While marketing firms have taken full advantage of this perception, several groups have looked at how, exactly, cranberries affect human health. Though it may be a bit tart, there's more than meets the eye when it comes to this humble berry.



### On Promoting Health

- Cranberries are rich in a variety of molecules, notably: flavanols and phytochemicals. However, the effect these small molecules have on humans, after consumption, is not yet clear.
- A-type procyanidins have been shown to protect against certain infections in humans, and so the researchers hypothesized that these molecules may elicit other effects throughout the body.
- After consuming cranberry juice, with or without high levels of A-type procyanidins, the plasma metabolome of the individuals in the study was assessed via UHPLC-Q-Orbitrap MS system.
- Not only were unique, exogenous metabolites found elevated in the plasma of individuals who consumed juice rich in A-type procyanidins, but endogenous metabolites like hippuric acid, dihydroxyquinoline, and glycerol 3-phosphate were elevated, as well.
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## Interactions with Gut Microbiota

- As the microbiome becomes an increasingly investigated aspect of human health, so has the effects of food on the gut microbiome.
- While it has been long known that the procyanidins in cranberries elicit an antifungal effect on some uropathogens, research has uncovered a broad range of anti-microbial effects for the food, including protection against *Helicobacter pylori*, *Streptococcus mutans*, and *Staphylococcus aureus*.
- The 'western diet' (high fat, low fiber) has been shown to dysregulate gut barrier function. However, consumption of cranberries has been shown to attenuate the inflammation associated with this dysfunction.
- Phytochemicals found in cranberries, particularly the bioactive procyanidins, have been shown to protect against extraintestinal pathogenic *E. coli* by effectively decreasing their virulence and motility.
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