

## Blueberries: The Antioxidant Powerhouse

### *What Is A Free Radical?*

Reactions in our body produce unstable molecules called free radicals that inflict damage to our DNA and other components of our cells. Free radicals play a big role in turning normal cells into cancer cells<sup>[1]</sup>.

### *Nutrition and Free Radicals*

It is necessary to consume high amounts of antioxidants to neutralize free radicals and prevent them from harming our cells<sup>[2]</sup>. Phenols are a certain type of antioxidant found abundantly in fruits. It has been stated that

*'high fruit consumption can significantly reduce the incidence and mortality rates of cancer, cardiovascular disorders, and other degenerative diseases caused by oxidative stress'*<sup>[3]</sup>

and Phenols can help prevent the formation of cancer cells<sup>[4]</sup>.

### *The Antioxidant Capacity of Blueberries*

Blueberries contain tremendous amounts of antioxidants, especially quercetin, a polyphenol found to possibly play a role in helping prevent prostate cancer<sup>[5]</sup>. Blueberries also contains high amounts of another polyphenol, resveratrol<sup>[6]</sup> as well as an antioxidant called pterostilbene, also found to be effective against cancer<sup>[7]</sup>. Quercetin and resveratrol have shown a consistent ability to help prevent the formation of cancer cells<sup>[8]</sup>



*When it comes to fruit, few pack more of an anti-cancer punch than blueberries.*

### *The Importance of Eating Whole Foods*

Although you can buy resveratrol and quercetin in pill form, whole foods contain many other factors scientists have yet to discover that contribute to the actions of antioxidants like resveratrol and quercetin. Buying supplements of resveratrol and quercetin will give beneficial effects but vitamins by themselves are not superior to eating whole foods.

### Reference:

1. Droge, W., *Free radicals in the physiological control of cell function*. *Physiol Rev*, 2002. 82(1): 47-95
2. Fang. *Free radicals, antioxidants, and nutrition*. *Nutrition*, 2002. 18(10): p. 872-9.
3. Zheng, W. and S.Y. Wang, *Oxygen radical absorbing capacity of phenolics in blueberries, cranberries, chokeberries, and lingonberries*. *J Agric Food Chem*, 2003. 51(2): p. 502-9.
4. Yang, C.S., et al., *Inhibition of carcinogenesis by dietary polyphenolic compounds*. *Annu Rev Nutr*, 2001. 21: p. 381-406.
5. Hakkinen, S., *Screening of selected flavonoids and phenolic acids in 19 berries*. *Food Res Int*, 1999. 32: p. 345-353.
6. Lyons, M.M., et al., *Resveratrol in raw and baked blueberries and bilberries*. *J Agric Food Chem*, 2003. 51(20): p. 5867-70.
7. Rimando, A.M., et al., *Cancer chemopreventive and antioxidant activities of pterostilbene, a naturally occurring analogue of resveratrol*. *J Agric Food Chem*, 2002. 50(12): p. 3453-7.
8. Lontas, A. and H. Yeger, *Curcumin and resveratrol induce apoptosis and nuclear translocation and activation of p53 in human neuroblastoma*. *Anticancer Res*, 2004. 24(2B): p. 987-98.