

## Live Longer Thanks to Plant Polyphenols

Richard Béliveau

*Translated from Le Journal de Montréal, September 30th, 2019*

*People who regularly consume foods rich in flavonoid polyphenols are at lower risk of dying prematurely from cardiovascular diseases or from cancer.*

Plants are indispensable for the prevention of chronic diseases because they are the only foods which contain pharmacologically active molecules capable of interfering with the development of pathologies such as atherosclerosis, hyperglycemia and cancer. This protective role is well illustrated by studies showing that, worldwide, about 8 million people die prematurely of cardiovascular diseases and cancer because they do not consume an adequate amount of fruits and vegetables<sup>1</sup>.

A large number of preclinical and epidemiological studies suggest that a good part of the benefits associated with the consumption of plants is due to flavonoids, a class of polyphenols found in abundance within some foods of plant origin. Based on their chemical structures, there are six large subclasses of flavonoids in nature including the flavonols (onions, broccoli, tea, and many fruits), the flavones (parsley, celery), the flavanones (citrus fruits), the anthocyanidins (berries, red wine) and isoflavones (soya). All these molecules modulate, to varying extents, several phenomena involved in the development of chronic diseases, particularly inflammation and oxidative stress, and thus greatly contribute to the positive impact that plant-based foods have on health.

### LOWERING PREMATURE DEATH

This important role for flavonoids is supported by the results of a recent study performed in Denmark<sup>2</sup>. By examining the dining habits of 56,048 Danes over a period of 23 years, the researchers found that the people who consumed the most flavonoids had a reduction of 17% in the risk of dying prematurely of cardiovascular disease and a risk of death due to cancer that was diminished by 30% compared to those who consumed less. These protective effects reached a maximum at 500 mg of flavonoids per day, although even greater intakes of up to 1000 mg per day seemed to confer additional protection for smokers as well as for people who daily consumed 20 g or more of alcohol (1-2 glasses). It is possible that, for these people, a greater intake of flavonoids allows some compensation for the metabolic and inflammatory



damage caused by tobacco and alcohol. It should, however, be noted that the flavonoid-induced reduction in cardiovascular deaths and cancer deaths are not observed in obese individuals: for example, while a reduction of 22% was observed in the risk of cardiovascular death for people of normal weight (BMI between 19 and 25), this protection disappeared completely for those with a BMI of 30 or more. It thus seems that the major derangements in metabolism caused by excess weight are too severe to be diminished by the bioactive compounds in plants, which once more underlines the importance of remaining thin in order to reduce the risk of chronic diseases.

Many foods are excellent sources of flavonoids, notably tea, dark chocolate, red wine, citrus fruits, berries, apples and broccoli. It is thus fairly easy to ingest sufficiently large amounts of these polyphenols to take advantage of the protective effects noted in the study. For example, it is easily possible to achieve the objective of 500 mg of flavonoids by consuming in one day an apple, an orange and a portion of broccoli, a portion of berries and a drink such as green tea.

- (1) Aune D et al. Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality—a systematic review and dose–response meta-analysis of prospective studies. *Int J. Epidemiol.* 2017; 46: 1029–1056.
- (2) Bondonno NP et al. Flavonoid intake is associated with lower mortality in the Danish Diet Cancer and Health Cohort. *Nat. Commun.* 2019; 10: 3651.