Apple Phenolics and Their Health Benefits


Apple phenolics may protect human cells from oxidative damage and has been associated with prevention of several diseases (Hollman and Katan 1999, Hollman 2001, Lee, Kim et al. 2003, Liu 2003, Boyer and Liu 2004).

Cancers

Research suggests that apple phenolics may reduce the risk of lung cancer (Boyer and Liu 2004), especially among current and past smokers (Cutler, Nettleton et al. 2008).

In general, individual fruits and vegetables are not related with lung cancer risk in humans, however, apples are among the few examples of fruits which are strongly associated with a significantly reduced risk of lung cancer (Hertog, Feskens et al. 1994).

As reviewed by Boyer and Liu (2004) studies in Finland and Hawaii found apple phenolics reduce lung cancer risk and concluded that only apples were inversely related to the risk of lung cancer. According to Fiuza et al. (2004), gallic acid derivatives in apple phenolics are known to cause apoptosis in tumor cell lines as well as inhibiting lymphocyte proliferation. In addition, apple flavonoids were shown to have a synergistic effect in reducing cancer risk (Hertog, Feskens et al. 1994). Quercetin glycosides and procyanidin have been linked with strong antioxidant activity in in vitro observation (Knekt, Isotupa et al. 2000). Quercetin has also demonstrates the ability to retard the growth of cancer cells in colon
and liver (*in vitro*) (Eberhardt, Lee et al. 2000, Rossi, Negri et al. 2006, McCann, Gill et al. 2007).

**Cardiovascular diseases**

Apple phenolics may help reducing the risk of cardiovascular diseases (Hollman and Katan, 1999; Knekt et al., 1996; Sesso et al., 2003).

Apple phenolics help to improve circulation. Research shows that apple apple phenolics may help to reduce the risk of thrombotic stroke. This may result from their contribution in the reduction of cholesterol level, especially LDL (bad cholesterol).

**Respiratory health**

According to a study from Australia, apple phenolics may reduce the risk of asthma and bronchial hypersensitivity (Woods, Walters et al. 2003), while other known antioxidants such as vitamin E, retinol and vitamin C have no effect (Shaheen, Sterne et al. 2001).

A similar inverse relationship was found in studies conducted in Netherlands, Wales and Finland, Shaheen, Sterne et al. (2001) suggested that incorporating apple phenolics in one’s diet will decrease the severity of asthma and its symptoms.

**Diabetes**

The risk of developing type II diabetes may also be lowered by apple phenolics intake. Boyer and Liu (2004) reviewed a human observational study, in which it was suggested that apple phenolics might reduce the risk by 28%.

In addition to their lowering diabetes risk, apple phenolics and fibre help in lowering the blood glucose level and balancing the body’s insulin response (Knekt, Kumpulainen et al.)
A recently published health population study further emphasises that apple was amongst the fruits with a significant reduction effect of the risk of having type II diabetes (up to 23%). This positive health effect was observed when the phenolics were absorbed and bioavailable (Muraki, Imamura et al. 2013).

In other studies based on animal models and a number of human studies, apple phenolics (mainly chlorogenic acid and quercetin) have been linked to attenuated postprandial glycemic responses and fasting hyperglycemia and improved acute insulin secretion and insulin sensitivity (Clifford 2004, Scalbert, Manach et al. 2005, Hanhineva, Törrönen et al. 2010).

References


