

2.3.7 BERRIES

Berries are not only low energy delicious food, but are also rich sources of fibre, antioxidant vitamins and various phenolic compounds comprising of flavonoids and phenolic acids. The main classes of flavonoids in berries are anthocyanins, proanthocyanidins, catechins and flavonols (Wang et al. 1997). Phenolic acids present in berries are hydroxylated benzoic and cinnamic acid derivatives (Wang et al. 1997). Various potential health benefits have been attributed to flavonoids and phenolic acids present in berries.

Berries of *Vaccinium* sp. have been reported to possess a range of biological activities. Cranberries and wild blueberries have been shown to prevent urinary tract infections. This defensive action has been credited to the condensed tannins or proanthocyanidins, which are said to act as anti-adhesive agents hindering bacterial colonization (Ofek et al. 1996; Howell et al. 1998). In wild blueberry, proanthocyanidins have been recognized as the active agents inhibiting the *in vitro* promotion of chemically-induced carcinogenesis (Bomser et al. 1996).

Fruit extract of wild bilberry repressed LDL oxidation (Laplaud et al. 1997), exhibited astringent and antiseptic characteristics, diminished the permeability and fragility of capillaries, inhibited platelet aggregation, inhibited urinary tract infection and intensified the collagen matrices via cross linkages (Morazzoni and Bombardelli 1996; Morazzoni and Magistretti 1990).

2.3.8 TEA

Tea first originated from China, where it has been consumed for its medicinal properties since 3000 BC (Balentine 1997). The three most important varieties of tea are green (unfermented), oolong (semi-fermented) and black (fully fermented). Green tea is known to contain significant amounts of catechins, which are easily extracted into hot water from the leaves as infusions. During the production of black tea, the dimeric theaflavins and thearubigens are formed by the enzyme catalytic oxidation reaction of catechins. Green tea contains catechins (90%) and flavonols (10%); black tea is comprised of catechins (30%), flavonols (10%), theaflavins (13%) and thearubigens (47%) (Tijburg et al. 1997).

Tea has been proved to possess antiviral, antibacterial and antifungal properties. Evidence has also suggested that drinking tea imparts protection against cancer and CVD and it is generally believed that flavonoids are mainly responsible for these biological activities. A study on native residents of Shizuoka, Japan, where green tea is produced and consumed, showed lower mortality rates due to stomach, lung and liver cancers than comparable populations in non-green tea consuming regions (Oguni et al. 1992). Epidemiological studies conducted showed that tea may reduce the risk for certain cancers (Blot et al. 1996; Kohlmeier et al. 1997b). However, the epidemiological evidence for a preventative effect of tea against cancer and CVD is still regarded as inconclusive (WCRF 1997; Kris-Etherton et al. 2002). On the contrary, research findings from animal and *in vitro* studies clearly supported a cancer chemopreventive effect for tea, which covers the entire process of carcinogenesis