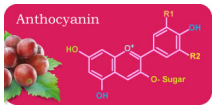

Anthocyanins (also anthocyans; from Greek: ἄνθός (anthos) = flower + κυανός (kyanos) = blue) are water-soluble vacuolar pigments that may appear red, purple, or blue according to pH. They belong to a parent class of molecules called flavonoids synthesized via the phenylpropanoid pathway; they are odorless and nearly flavorless, contributing to taste as a moderately astringent sensation. Anthocyanins occur in all tissues of higher plants, including leaves, stems, roots, flowers, and fruits. Anthoxanthins are their clear, white to yellow counterparts occurring in plants. Anthocyanins are derivatives of anthocyanidins, which include pendant sugars.

In flowers, bright reds and purples are adaptive for attracting pollinators. In fruits, the colorful skins also attract the attention of animals, which may eat the fruits and disperse the seeds. In photosynthetic tissues (such as leaves and sometimes stems), anthocyanins have been shown to act as a "sunscreen", protecting cells from high-light damage by absorbing blue-green and UV light, thereby protecting the tissues from photoinhibition, or high-light stress. This has been shown to occur in red juvenile leaves, autumn leaves, and broad-leaved evergreen leaves that turn red during the winter. It has also been proposed that red coloration of leaves may camouflage leaves from herbivores blind to red wavelengths, or signal unpalatability, since anthocyanin synthesis often coincides with synthesis of unpalatable phenolic compounds.

In addition to their role as light-attenuators, anthocyanins also act as powerful antioxidants. However, it is not clear as to whether anthocyanins can significantly contribute to scavenging of free-radicals produced through metabolic processes in leaves, since they are located in the vacuole and, thus, spatially separated from metabolic reactive oxygen species. Some studies have shown that hydrogen peroxide produced in other organelles can be neutralized by vacuolar anthocyanin.

Thank You : http://en.wikipedia.org/wiki/Anthocyanin