Role of Antioxidants in Vegetable Crops

Smita Kumari[1], Y. K. Meena[2] and P.P. Mohapatra[3]

[1] Departmnet of Vegetable Science and Floriculture, CSKHPKV, Palampur, Himachal Pradesh
[2]Department of vegetable Science, Punjab agricultural University, Ludhiana, 141-004
[3]Department of vegetable Science, BCKV, Mohanpur, Nadia, 741252 (WB)
E-mail :[1]smitak659@gmail.com

Abstract—*Antioxidants are believed to play a very important role in the body defence system against reactive oxygen species (ROS) or free radicals, which are harmful by-products generated during aerobic activity of normal cells. Antioxidants are our first line of defense against free radical damage, and are critical for maintaining optimum health and well being. Vitamin C, E, and beta carotene are among the most widely studied dietary antioxidants. Vitamin C is considered as the water-soluble where as vitamin E lipid-soluble antioxidant, is the most effective chain-breaking antioxidant within the cell membrane where it protects the membrane from lipid peroxidation. Phytochemicals are also known for their antioxidant activity. Sulfur containing phytochemicals, such as the allyl sulfides found in the allium family (garlic, onions, and leeks), and isothyocyanates and sulphoraphane (cabbage, broccoli, and cauliflower) have been shown to inhibit various steps in tumor development. Phenolic compounds such as flavonoids are ubiquitous within the plant kingdom. It has been demonstrated to have anti-inflammatory, antiallergenic, anti-viral, anti-aging, and anti-carcinogenic activity. Glutathione, an important water-soluble antioxidant, is synthesized from the amino acids glycine, glutamate, and cysteine. Glutathione plays a major role in xenobiotic metabolism. Anthocyanins are the secondary metabolites produced by the plants are water- soluble pigments which is responsible for colours like purple , blue, pink, red in the tissues of higher plants, including leaves, stems, roots, flowers, and fruits. Brinjal is the major source for anthocyanin pigment. Lipoic acid and its reduced form, dihydrolipoic acid are capable of quenching free radicals in both lipid and aqueous domains and are known as universal antioxidants. Lycopene, which is an antioxidative substance, is present in a variety of red fruits like tomatoes, watermelons and it is the most powerful carotenoid antioxidant that is effective in neutralizing free radicals. Dark green leafy vegetables are rich in antioxidants, including vitamins A, C and E, as well as luetin and selenium.*

Keywords: *antioxidants, vegetables, relative oxygen species, vitamins*