

MECHANISMS OF ANTIOXIDANT ACTIVITY OF NATURAL FOOD SUPPLEMENTS

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A lot of up-to-date natural food supplements is claimed to possess antioxidant activity, although its mechanism not always clear. We have studied the effects of natural food supplement Bio-normalizer (prepared by the fermentation of *Carica papaya*), bioflavonoid rutin, lipoic acid, α -tocopherol, and ascorbic acid. It was found that the direct antioxidant activity of these substances depends on (1) scavenging of active free radicals, (2) the chelation of transition metal ions capable of catalyzing the decomposition of hydrogen peroxide to hydroxyl radicals (the Fenton reaction), and (3) the balance of their antioxidant and prooxidant properties. Under all the conditions studied, Bio-normalizer and rutin exhibited no prooxidant properties but scavenged superoxide ion and hydroxyl radicals and formed inactive complexes with iron, copper, and lead in both *in vitro* and *in vivo* experiments. α -Tocopherol was an effective scavenger of active free radicals but did not react with superoxide ion and exhibited no chelating properties. Lipoic and ascorbic acids manifested both antioxidant and prooxidant activities in model systems depending on their concentrations and other experimental conditions but were principally inhibitory in animal experiments. It has been concluded that the potency of the above natural substances as food supplements depends on their direct and indirect antioxidant properties.

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