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Inhibition of discoloration of fruit and vegetable juices by coconut paring residual extract

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Consumption of fruits and vegetables are positively associated with various health effects and prevention of diseases, due to the presence of polyphenols, vitamins and minerals. Drinking fruit and vegetable juices has become an efficient and convenient way to increase the consumption of fruits and vegetables. Various color pigments, such as carotenoids and betalains, are abundantly present in fruits and vegetables, providing them their unique colorations. These respective colors are generated by conjugated π -bond systems. As a result of being exposed to oxidizing species or free radicals, or exposure to light, thermal pasteurization, storage temperature and pH, these conjugated systems can be subjected to changes. These changes may result in discoloration of fruit and vegetable juices. Antioxidants exhibit the ability to scavenge free radicals. Therefore, antioxidants can prevent the discoloration caused by the action of free radicals. Synthetic antioxidants such as Butylated hydroxytoluene (BHT) and beta hydroxy acids (BHA) are commonly used as stabilizers in the food industry. However, they have been identified to be carcinogenic in some organisms. They also have high volatility and greater decomposition rates at high temperatures. Therefore, the use of synthetic antioxidants in food industry have been restricted in some countries. Coconut paring residual extract (CPRE) has been proved to exhibit radical scavenging and antioxidant activity due to the presence of polyphenols. In this study, CPRE was utilized as a natural alternative to synthetic antioxidants to inhibit discoloration of fruit and vegetable juices. In the β -carotene-linoleate-bleaching test, CPRE (50 $\mu\text{g/mL}$) showed a discoloration percentage of $9.49 \pm 0.0021\%$ of initial color intensity, while the blank showed $54.99 \pm 0.0025\%$ discoloration after 3 hours. Several fruit and vegetable juice extracts exhibited an inhibition of their discoloration by CPRE. Watermelon, papaya, tomato, carrot, beetroot, mango and a mixed fruit juice (with banana, papaya, orange and mango) were tested here. The results of this study suggest that CPRE can be used as an effective stabilizer in food industry.

Keywords: Antioxidants, β -carotene-linoleate-bleaching test, Coconut paring residual extract, Fruit and vegetable juices, Phenolic content.