

Metabolic Responses of Tea (*Camellia* sp.) to Exogenous Application of Ascorbic Acid

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Abstract

Effects of exogenous application of ascorbic acid on physiological and metabolic changes in tea were investigated in the present study. The highest improvement in yield was evident in response to regular application (a day after every harvest) of ascorbic acid at 600 ppm followed by 400 ppm. Foliar application of ascorbic acid (600 ppm) at regular intervals enhanced chlorophyll *a* and *b* contents besides a significant increase in total polyphenols and catechins when compared to the untreated control. Exogenous application of ascorbic acid at alternate harvesting rounds increased the activity of polyphenol oxidase whereas ascorbate peroxidase remained unchanged. An increase in phenylalanine ammonia lyase activity was noticed with foliar application of ascorbic acid irrespective of its concentrations. Theaflavins and thearubigins of made tea showed an increase when ascorbic acid was applied with 400 and 600 ppm at alternate intervals. The scores of brewed tea liquor characteristics, viz. infusion, color, strength, and briskness were higher even at the lower concentration of ascorbic acid treatment. Results suggest that foliar application of ascorbic acid (400 ppm) proved to be a useful measure to improve the yield, physiological attributes, and antioxidant properties of tea.

Key words: antioxidants, ascorbic acid, biochemical, physiological, tea