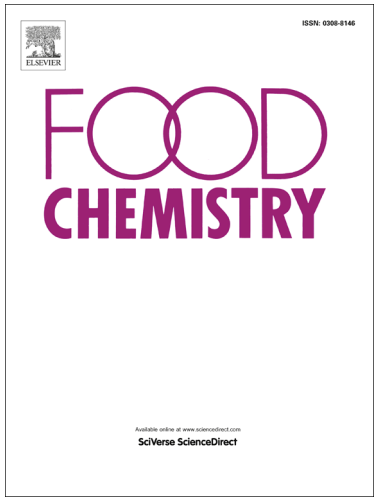

GABA mediates phenolic compounds accumulation and the antioxidant system enhancement in germinated hulless barley under NaCl stress

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GABA mediates phenolic compounds accumulation and the antioxidant system enhancement in germinated hulless barley under NaCl stress

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Abstract: In this study, the function of γ-aminobutyric acid (GABA) on the phenolic compounds accumulation and antioxidant system enhancement in germinated hulless barley under NaCl stress was investigated. Results showed that exogenous GABA induced the accumulation of phenolic compounds. It was observed that the activities and gene expression of phenylalanine ammonia lyase (*PAL*), cinnamic acid 4-hydroxylase (*C4H*), 4-coumarate coenzyme A ligase (*4CL*), *p*-coumaric acid 3-hdroxylase (*C3H*), caffeic acid O-methyltransferase (*COMT*) and ferulic acid 5-hydroxylase (*F5H*) which are involved in phenolics biosynthesis was up-regulated by NaCl stress plus GABA treatment. In addition, antioxidant enzymes activities were induced. However, these effects were suppressed by 3-mercaplopropionic acid (3-MP), an inhibitor of GABA synthesis. This inhibition could be alleviated partly by exogenous GABA. These results suggested that GABA was essential for mediating NaCl stress-induced phenolic compounds accumulation and the antioxidant system enhancement in germinated hulless barley.

Keywords: NaCl stress; germinated hulless barley; GABA; phenolic compounds; antioxidant system