Title Effects of methyl jasmonate and wounding on the chemical Properties of sweet basil (*Ocimum basilicum* L.)

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Abstract

Sweet basil (*Ocimum basilicum* L.) is an important aromatic herb that is popularly used in culinary arts. In the present study, treatments of methyl jasmonate (MeJA) and wounding were applied on the basil plants cultivated in the greenhouse at Clemson Univ. to evaluate their effects on the basil chemical properties. MeJA solution (10μM) was sprayed during the cultivation, and 4th and 5th leaves of healthy basil plants were artificially wounded before harvesting. After harvest, changes of the total phenolic compounds, essential oil constituent, and antioxidant activity (in DPPH free radical scavenging capacity) were determined. Total phenolic compounds and antioxidant activity were significantly induced in 36% and 63%, respectively, by the treatment of MeJA because of the significant induction of rosmarinic acid. On the other hand, induction rates of total phenolic compounds and antioxidant activity by wounding were in 14% and 37%, respectively. In addition, increased concentration of eugenol in basil could be induced by using either MeJA alone or employing the combination of MeJA and wounding. Such desirable increases of the phenolics and the antioxidant activity may promote the basil market values.