

Abstract

Basil (*Ocimum basilicum*) is a medicinal plant of the Lamiaceae family, contains aromatic compounds and essence. It is an antibacterial and antioxidant plant that from ancient times was used for treatment of some diseases like: headache, cough, diarrhea, fever and inflammation of the throat and stomach aches. Basil essence mainly consists of phenyl propanoids compounds, that biosynthesis pathway of these compounds are passed from Shikimate pathway. The most important of these compounds are chavicol, methyl chavicol, eugenol, methyl eugenol and cinnamat. One of the most important essence of basil compounds is methyl chavicol or estragol that's a derivative aromatic allyl phenol of non-terpenoids. In biosynthesis pathway, Phenylalanine is precursor of methyl chavicol. Then two pathways are resulted: chavicol and methyl chavicol are obtained from the first pathway, and eugenol and methyl eugenol are obtained from the second pathway. First phenyl alanine is de-amino by phenyl alanine ammonia-lyase enzyme, cinnamic acid is made, then para-coumaric is made by adding hydroxyl, afterwards aldehydes and alcohols forms of Para-coumaric are made, and finally at the end, chavicol is resulted. In final stage, due to methylation of 4-OH chavicol by chavicol- o-methyl transferase enzyme (CVOMT), methyl chavicol are formed. The role of salicylic acid was known as an effective bio-stimulant for improving the biosynthesis of secondary metabolites in plants. In this study, the effects of salicylic acid has been studied and surveyed on gene expression and amounts of methyl chavicol. The experiments of this study were performed in the bio-tech center of Zabol University in 2013. The basil plants were treated by salicylic acid indifferent times 1, 2, 3 and 5 days after treatment plants harvested. Gene expression was performed by Real-Time PCR and methyl chavicol was measured by GC-MS. The results showed that after treatment, the gene expression and amounts of methyl chavicol were increased and on third day after treatment reached to highest level and on fifth day it reduced. Generally, the process of changes in gene expression of CVOMT and methyl chavicol in different stages of harvests were corresponded. Thus, salicylic acid as stimulant, caused increasing the gene expression of CVOMT and amount of methyl chavicol.

Keywords: basil, essence, gene expression, CVOMT, salicylic acid



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expression and methyle chavicol in basil
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