

The Plant Hormone Auxin Impacts the Profile of Aroma Compounds in Tomato Fruits (*Solanum lycopersicum*)

Authors : Vanessa Caroline De Barros Bonato, Bruna Lima Gomes, Luciano Freschi, Eduardo Purgatto

Abstract : The plant hormone ethylene is closely related to the metabolic changes that occur during fruit ripening, including volatile biosynthesis. Although knowledge about the biochemistry pathways that produce flavor compounds and the importance of ethylene to these processes are extensively covered, little is known about the regulation mechanisms. In addition, growing body of evidences indicates that auxin is also involved in controlling ripening. However, there is scarce information about the involvement of auxin in fruit volatile production. This study aimed to assess auxin-ethylene interactions and its influence on tomato fruit volatile profile. Fruits from tomato cultivar Micro-Tom were treated with IAA and ethylene, separately and in combination. The hormonal treatment was performed by injection (IAA) or gas exposure (ethylene) and the volatiles were extracted by Solid Phase Microextraction (SPME) and analyzed by GC-MS. Ethylene levels and color were measured by gas chromatography and colorimetry, respectively. The results indicate that the treatment with IAA (even in the presence of high concentrations of exogenous ethylene), impacted the profile of volatile compounds derived from fatty acids, amino acids, carbohydrates and isoprenoids. Ethylene is a well-known regulator of the transition from green to red color and also is implicated in the biosynthesis of characteristic volatile compounds of tomato fruit. The effects observed suggest the existence of a crosstalk between IAA and ethylene in the aroma volatile formation in the fruit. A possible interference of IAA in the ethylene sensitivity in the fruit flesh is discussed. The data suggest that auxin plays an important role in the volatile synthesis in the tomato fruit and introduce a new level of complexity in the regulation of the fruit aroma formation during ripening.

Keywords : aroma compounds, fruit ripening, fruit quality, phytohormones

Conference Title : ICFSN 2015 : International Conference on Food Science and Nutrition

Conference Location : London, United Kingdom

Conference Dates : June 28-29, 2015