MicroRNA regulation during the tomato fruit development and ripening: A review

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Abstract

The microRNA (miRNA) molecules class is the most studied class of non-coding RNA. These molecules regulate the developmental program in plants including fruit ripening. Therefore, a rapid increase in the miRNA discovery rate has been reported. MiRNAs are mainly registered in the miRBase database, in spite that such database had been out of maintenance and update since 2014 to 2018. However, the miRBase V22 was recently released and perhaps new trends in miRNA research might come to light. The aim of this review is to update the functional role of miRNAs during fruit development and ripening of tomato which is the model for climacteric and fleshy fruit development. Some miRNAs were involved in the regulation of valuable features for crop improvement including fruit set (miR159), fruit shape (miR160/166/168), locule number (miR164), softening (miR156) and multitask role (miR171). The miR396 resulted in strong phenotype related to the increase of fruit size and yield whereas miR1917 resulted in ripening acceleration time, respectively.