

## Impact of Exogenous Melatonin on Fruit Quality and Storability of Tomato (*Solanum lycopersicum* L.)

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### Abstract

our study revealed the beneficial effect of melatonin, an indole amine hormone, on food value and storability of tomato. We have taken four doses of melatonin viz. 50, 100, 250 and 500  $\mu\text{mol/L}$ . Two sprays were done at fruit setting and color break stage. Application of melatonin @ 250  $\mu\text{mol/L}$  was found to be advantageous in improving the carbohydrate, protein, fat, total sugar and total soluble solids content in tomato fruits as compared to control (without melatonin). Melatonin application @ 250  $\mu\text{mol/L}$  showed reduced activity of polygalacturonase-I (37.16%), polygalacturonase-II (39.40%) and ascorbic acid oxidase (35.14%) as compared to control; whereas maximum reduction of polyphenol oxidase activity (28.03%) was associated with melatonin (500  $\mu\text{mol/L}$ ). Melatonin application on phenolics, flavonoids, ascorbic acid and antiradical activity in tomato also shown interesting results. Overall, exogenous application of melatonin @ 50 to 100  $\mu\text{mol/L}$  was found to be beneficial for higher bioactivity in tomato in terms of lycopene content ( $15.56 \pm 0.99$  mg/kg of tissue), total phenolics (27.8 mg GAE/100 g), L-ascorbic acid ( $28.45 \pm 2.51$  mg/100 g) and DPPH radical scavenging activity (12.80 mg AAE/100 g). Total flavonoids content was found to be highest (3.30 mg QE/100 g) with melatonin @ 250  $\mu\text{mol/L}$ .

Moreover, application of Melatonin (250  $\mu\text{mol/L}$ ) increased the shelf life up to 25 days as compared to 15 days under control at room temperature. The findings clearly suggest that application of exogenous melatonin is a potential option for enhancing food value and storability of tomato.

### Biography:

Dr. S. S. Roy has completed his PhD at the age of 27 years from Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India. He is presently working as Senior Scientist at ICAR Research Complex for NEH Region, Manipur Centre, India. He has published more than 30 papers in reputed journals and authored 4 books. His major fields of research are quality improvement of horticultural crops, organic farming, integrated farming system and bioprospecting of indigenous plants.

### Speaker Publications:

1. "Functional food quality of *Curcuma caesia*, *Curcuma zedoaria* and *Curcuma aeruginosa* endemic to Northeastern India"
2. "Identification and characterization of a distinct banana bunchy top virus isolate of Pacific-Indian Oceans group from North-East India"
3. "Vermiculture can be practiced in all plantation crops"
4. "Effect of different bio-organic inputs on growth, yield and economics of turmeric grown as intercrop in arecanut plantation"

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