

Plants emit chemically diverse volatile compounds for attracting pollinators or putting up a chemical defense against herbivores. 2-Phenylethanol (2PE) is one of the abundantly emitted scent compounds in rose flowers. Feeding experiments with L-[²H₈]phenylalanine into rose flowers and subsequent analysis using gas chromatography–mass spectrometry analysis revealed the hypothetical biosynthetic intermediates to [²H₈]-2PE, and the biochemical and genetic analyses elucidated the principal pathway to [²H₈]-2PE. We recently found season-specific 2PE pathway producing [²H₇]-2PE from L-[²H₈]phenylalanine. This is a unique example where the dominant pathway to a specific compound changes with the seasons. This review focuses on the biosynthesis of floral volatiles and their regulation to adapt to the changes in the environment.

Seasonal changes in the production of [₂H_n, n = 7, 8]-2PE and its biosynthetic pathway.

