



Physiological and Biochemical Basis of Differential Organ Longevity in Narcissus Flowers (*Narcissus tazetta*, *N. papyraceus*)

Azra Haghshenas¹, Abolfazl Jowkar^{2*}

¹ Ph.D. Graduate, Department of Horticultural Science, College of Agriculture, Shiraz University, Shiraz

² Associate Professor, Nuclear Agriculture Research School, Nuclear Science and Technology Research Institute (NSTRI), Atomic Energy Organization of Iran, Karaj

Abstract

Postharvest organ longevity strongly affects cut flower quality. This study examined physiological and biochemical senescence in petals and coronas of Iranian narcissus (*Narcissus tazetta* and *N. papyraceus*). Coronas showed longer longevity (6.6 days) than petals (3.2 days). Faster petal senescence was associated with reduced protein and relative water content and increased oxidative stress indicators.

Introduction

- ✓ Extending flower longevity is a major goal in postharvest floriculture.
- ✓ Narcissus is an important Iranian cut flower with limited information on organ-specific senescence.
- ✓ Floral organs age asynchronously due to differences in structure and function.

➤ Objective:

To compare physiological and biochemical senescence processes in petals and coronas of Iranian narcissus populations.

Materials and methods

- ✓ Plant material: 10 Iranian populations of *Narcissus tazetta* and *N. Papyraceus* cultivated in Greenhouse
- ✓ Harvest stage: First flower opening
- ✓ Evaluations: At harvest and 3 days postharvest
- ✓ Measured traits:
 - Vase life (visual scoring)
 - Relative water content (RWC), ion leakage
 - H₂O₂ and MDA
 - Protein content
 - Antioxidant enzymes (SOD, POD, CAT)
 - Total carotenoids
- ✓ Design: CRD, ANOVA, Duncan test (P < 0.05)

Results and discussion

Flower Longevity

- ✓ Corona longevity: 6.6 days (average)
- ✓ Petal longevity: 3.2 days (average)
- Petal senescence was the main limiting factor of inflorescence vase life.
- White narcissus (*N. Papyraceus*) showed the shortest organ longevity.

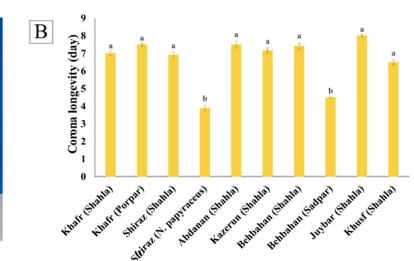
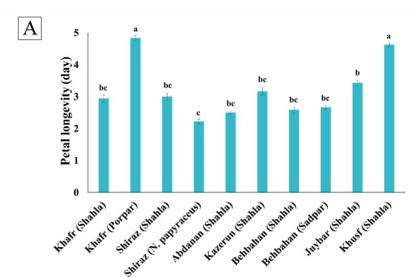


Fig. 1 Longevity of petals (A) and coronas (B) of Iranian narcissus populations.

Physiological & Biochemical Changes

- ✓ Petals showed:
 - Higher H₂O₂ and MDA
 - Faster decline in RWC and protein content
- ✓ Antioxidant responses during the first three days after harvest:
 - SOD increased in coronas, decreased in petals
 - POD activity increased, especially in petals
- Coronas maintained a stronger antioxidative defense.

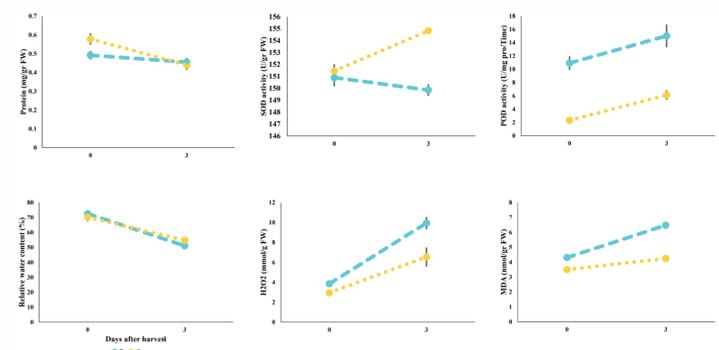


Fig. 2 Changes in physicochemical factors in the corona and petal tissues of Iranian narcissus plants after three days of storage (P: petal, C: corona).

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