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Effect of storage temperature and duration on pollen viability and in vitro germination of seven pistachio cultivars

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Abstract :

This study was conducted to examine the effect of storage temperature and duration on viability and in vitro germination of pollen grains of seven pistachio cultivars. Pollens were stored at room temperature ($24\text{ }^{\circ}\text{C}\pm 2$), refrigerator ($4\text{ }^{\circ}\text{C}$) and freezer ($-5\text{ }^{\circ}\text{C}$) for 0, 1, 2, 3 and 4 weeks. Pollen viability was estimated by using staining methods including tetrazolium test (TTC), iodine and potassium iodine (IKI) and safranin solutions, and using an in vitro pollen germination. The results showed that at all storage methods and durations, pollen viability and in vitro pollen germination were significantly the highest for Batouri and Ashouri cultivars and the lowest for Marawhi and Elemi cultivars. The highest pollen viability as estimated by safranin staining was attained when pollens were stored under freezer condition. However, pollen viability by TTC was the lowest at room temperature storage. In addition, in vitro pollen germination and viability significantly decreased as storage duration increased. This study revealed no differences between in vitro germination percentages for refrigerated and freezer stored pollen up to 2 weeks. Meanwhile, in vitro germination of room-stored pollen was gradually decreased when storage duration increased. At the end of storage period, pollen viability was reduced slightly under freezer conditions whereas the reduction in viability was the largest for refrigerated and room-stored pollen with no differences between them. This study showed a significant interaction effect of cultivar x storage temperature x storage duration on pollen viability but not for in vitro pollen germination.

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