

**STUDY THE EFFECT OF ZATARIA MULTIFLORA AND EUGENIA CARYOPHYLLATA  
ESSENTIAL OIL ON SHELF LIFE AND SOME OTHER CHARACTERISTICS OF SULTANA  
GRAPES CONTAMINATED WITH *BOTRYTIS CINEREA***

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**I N T R O D U C T I O N** : Destruction and corruption of post-harvest crops especially in grapes are caused by fungal disease. Gray mold diseases associated with *Botrytis cinerea* is one of the most important agent in table grapes diseases [1]. This fungi cause considerable damage to pre and post-harvest grapes so, it can be the biggest obstacle of the long-term storage [2]. The use of chemicals to control postharvest decay which caused carcinogenic properties, long-term degradation, environmental pollution and other impacts on the food (such as toxicity and bad smells) and human health, are limited [3]. A lot of research on applying natural ingredients such as essential oils and herbal extract for preventing decay, is in progress. The aim of this study is evaluating the effect of *Zataria multiflora* and *Eugenia caryophyllata* essential oils on postharvest Sultana grapes shelflife against gray mold.

**MATERIALS AND METHODS:** The essential oils were extracted by hydro-distillation and analyzed by combination of GC and GC/MS. The tests results showed high percentage of anti fungal components like Thymol (44.4) and Carvacrol (26.3) in *Zataria multiflora* essential oil and also Eugenol (90.4) in *Eugenia caryophyllata* essential oil. The grapes were contaminated with *Botrytis cinerea* spores suspension at the concentration of  $5 \times 10^5$  per ml sterile distilled water. Then samples were treated with suspension of 0, 200 and 400 ppm *Zataria multiflora* and *Eugenia caryophyllata* essential oil. Samples were stored at 4 °C. When signs of corruption in the control samples were observed, all other samples were examined. Experimental design was factorial in a completely randomized design with three replications.

**RESULTS AND DISCUSSION** : Changes in Total Soluble Solid, Total glucose, pH, were measured. Reports are available show that during the storage, glucose of non-starchy fruits such as grapes, due to lack of carbohydrate, is reduced. Although, because of water losses in fruit during storage glucose apparently is increased. Increasing of soluble solids in the grape during storage is negligible. In this study the effect of different concentrations of the used essential oils on pH statistically was not significant but this effect on Total Soluble Solid and Total glucose was significant.

**Keywords:** *Botrytis cinerea*, essential oil, post harvest, gray mold, grapes.



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