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Pathological survey at different Egyptian local markets on green and blue moulds of lime and lemon fruits and its management using some mineral salts and organic acids. FJARD, 2022, 36(3): 295-312. DOI: 10.21608/FJARD.2022.266814

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Abstract

Survey of decayed lime and lemon fruits of local markets at Giza, Cairo and Fayoum Governorates, Egypt during 2018 and 2019 summer seasons was conducted. Several postharvest diseases was observed i.e., green mold, blue mold and Physical damage are the common on fruits. Results showed that fruit decay incidence in lime and lemon fruits was higher in Cairo Governorate whereas Fayoum Governorate was the lowest one. Routine isolation of rotten samples of lime and lemon fruits yielded mainly three genera of fungi i.e., *Penicillium digitatum*, *Penicillium italicum* and *Aspergillus* spp. Pathogenicity test indicated that *P. italicum* (No.7) was the most pathogenic fungi caused postharvest diseases on fruits followed by *P. digitatum* (No.6). The effect of two mineral salts; potassium sorbet and potassium silicate and the two organic acids; salicylic and β-amino–butyric acids against *P. digitatum* and *P.italicum* was evaluated for their inhibitory effect in vitro and in vivo under storage conditions. Under laboratory conditions, complete inhibition of mycelial growth of *P. digitatum* and *P. italicum* was obtained with potassium silicate, potassium sorbet (4.0, 5.0 and 6.0 g/L), as well as salicylic acid and β-amino –butyric acid (1, 1.5 and 2.0 g/L). In Vivo experiments, in 2018 and 2019 seasons, postharvest-treated fruits by different organic acids at full at a concentration of 4g/L and mineral salts at full at a concentration of 1g/L (w/v) showed various levels of either protective or curative effect for coated lime and lemon fruits against mould infection whatever the time of their artificial inoculation under storage conditions. All treated fruits showed reduction in green and blue mould diseases when compared with untreated fruits. Also, potassium silicate was the most effective treatment among the tested mineral salts, reducing the disease incidence and severity on lemons and lime fruits at (20±1°C) followed by Potassium sorbate. Salicylic acid was the most effective treatment in reduction ratio in disease incidence and disease severity. Also, the effect of potassium sorbet and potassium silicate as well as salicylic acid and β-amino–butyric on quality characteristics were studied. Total soluble solids (TSS%) and total phenolic substances (Tph) in lime and lemon fruits was studied. Furthermore, lime and lemon fruits stored and treated with some mineral salts and organic acids as individual treatments increased the activity of peroxidase, polyphenol oxidase and chitinase and achieved the higher content of total soluble solids % (TSS) and total phenolic compounds (Tph) activity % under artificial infection with *P.*digitatum and *P.italicum* stored at 20±1°C

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