



KMnO₄ IMPREGNATED ZEOLITE TO REDUCE ETHYLENE AND INCREASE POSTHARVEST LIFE OF FRUITS AND VEGETABLES

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Abstract

Covid 19 pandemic made a catastrophic plight in the food supply chain leading to many losses. Keeping extra quantities by local households or small scale vendors was not effective as there were no extra cooler rooms or any other way to reduce ripening and deterioration of fruits and vegetables. Therefore, the present study was aimed to optimize the quantity of potassium permanganate (KMnO₄) impregnated zeolite in reducing ethylene in a small volume and to increase postharvest shelf life of fruits and vegetables. In the first experiment quantity of KMnO₄ impregnated zeolite was optimized with two systems (I= 5 g of KMnO₄_zeolite+ 1 g of moisture adsorbent, II= 10 g of KMnO₄_zeolite +1 g of moisture adsorbent) and with control without ethylene absorbents. For all experiments 10 L airtight polypropylene box was used. Ethylene gas was injected into the container to reach 20 ppm inside the box and then ethylene concentrations were tested for 150 minutes using an ethylene meter. In the second experiment banana (Cavendish), tomato and chili were tested for the postharvest prolonging with system II and with control without ethylene absorbent. Moisture losses and visual parameters (firmness, colour, appearance, and pathogen attack) were tested. In experiment one system I reached 44 (± 5) % reduction in ethylene concentration while system II reached 62 (± 5) % of ethylene reduction. After respective days in storage chili and banana were severely affected in the control than the treatment with system II. After 10 days no significant visual parameter changers were observed for tomatoes in both systems. Significant weight loss was observed for chili in control than the system II. Ten grams of KMnO₄ impregnated zeolite is effective in increasing postharvest shelf life of chili and banana where this system can be used for small scale distributors and households.

Keywords: ethylene, fruits, KMnO₄, postharvest