

Effects of Ethylene Scavenging Packaging on the Shelf Life of Edible Mushroom

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Abstract : Edible mushrooms are those agricultural products which contain high quantity of protein and can have special role in human diet. So search for methods to increase their shelf life is important. One of these strategies can be use of active packaging for absorb the ethylene which has been studied in present study. In this study, initially, production of impregnating zeolite with potassium permanganate has been studied with zeolite clinoptiolite available in iran. After that, these ethylene scavengers were placed in the package of edible mushrooms and then transferred to the refrigerator with temperature 4c for a period of 20 days. Each 5 days, several experiments accomplished on edible mushrooms such as weight loss, moisture content, color, texture, bacterial experiments and sensory evaluation. After production of impregnating zeolite with potassium permanganate (with a concentration of %2.5, %5, %7.5, %10 and %12.5) by zeolite type clinoptiolite (with mesh 35 and 60), samples have been analyzed with gas chromatography and titration with sodium oxalate. The results showed that zeolite by concentration of %5, %7.5 and %10 potassium permanganate and mesh 60 have a higher efficiency. Results from the experiments on edible mushrooms proved that impregnated zeolite with potassium permanganate have a meaningful influence in prevent the weight loss, decrease of moisture content and L-value, increase of a-value and overall color change (ΔE) and decrease of firmness texture of mushrooms. In addition, these absorbents can influence on decrease microbial load (mesophilic bacteria) rather than control. Generally, concluded that the impregnated zeolite with 10% permanganate potassium has a high efficiency on increase the shelf life of fresh edible mushrooms.

Keywords : active packaging, ethylene scavenger, zeolite clinoptiolite, permanganate potassium, shelf life

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