

Weraya Phianphon 2009: Applications of Zeolite-based Ethylene Absorbers for Prolonging Shelf Life of Climacteric Fruits. Master of Science (Packaging Technology), Major Field: Packaging Technology, Department of Packaging Technology. Thesis Advisor: Associate Professor Vanee Chonhenchob, Ph.D. 157 pages.

Ethylene is a plant hormone involving plant growth and development including deterioration after harvest. This research was aimed to use zeolites as ethylene absorbing agents. Ethylene absorption at room condition (30 °C, 75% RH) were highest in Ethyl-gone<sup>®</sup> (1.7861 µg/g), which is a commercial ethylene absorber, CaA (1.7357 µg/g), NaA (0.8820 µg/g), and ZSM-5 (0.9316 µg/g), respectively. Temperature had a strong effect on ethylene absorption in Ethyl-gone<sup>®</sup> (1.7903 µg/g), but had a slight effect in CaA (0.0185 µg/g), NaA (0.2892 µg/g), and ZSM-5 (0.6814 µg/g). Zeolites were packaged in sachets made of plastics with high barrier to moisture; LDPE, PE-1, PE-2, and SEBS, with increasing gas permeability, respectively. Zeolites packaged in PE-1 and PE-2 had the highest ethylene characteristics. Therefore, CaA in PE-2 sachet was chosen as an ethylene absorber to be use with high gas permeable packaging materials (PE-1) in extending shelf life of Namdokmai mangoes and Hom bananas. Shelf lives of mangoes were 30 and 15 days at 12 °C and room temperature (29±2 °C), respectively. Bananas could be maintained for more than 45 days at 12 °C and 12 days at room temperature (29±2 °C). However, the results were not different in CaA and Ethyl-gone<sup>®</sup>, which were not different from control (without ethylene absorbers). High gas permeable packaging material (PE-1) could create the optimum modified atmospheres for Namdokmai mangoes and Hom bananas resulting in maintaining quality and extending shelf life of the fruits.

---

Student's signature

---

Thesis Advisor's signature

/ /