ABSTRACT

RIWAN KUSMIADI. Efficacy of Ginger and Turmeric Rhizome Extracts As An Effort to Extend the Storage Period of Salak Pondoh Due to Fungal Infection. This research was conducted under the supervision of ROKHANI HASBULLAH and OKKY SETYAWATI DHARMAPUTRA.

Control of postharvest diseases of fruits using chemical fungicides so far are quite effective, but its side effect on human health is not recommended. Therefore, it is necessary to find another technique which is cheaper and safer using botanical fungicide. Red ginger and turmeric extracts have strong antifungal activities, consequently they were used in this study. This study aimed: 1) To determine the most often fungal species isolated and the most potential fungal isolate which cause postharvest disease of salak Pondoh; 2) To asses the effectiveness of red ginger and turmeric rhizome extracts in inhibiting the growth of the most potential fungal isolate; 3) To find the most effective coating formula i.e. wax concentration in combination with extract concentration of botanical fungicide to maintain the quality of salak Pondoh during storage.

Randomized block design was used to determine the efficacy of two factors, i.e botanical fungicides (red ginger and turmeric rhizome extracts) and three concentrations (20, 30 and 40 %) of each botanical fungicide extract. A complete randomized block design with three treatments was used to examine the effectiveness of red ginger extract and wax on fungal infection of salak Pondoh during storage. The three treatments were: 1) waxing 10%; 2) red ginger rhizome extract 30%; 3) the combination of ginger rhizome extract 30% and waxing 10%. Salak Pondoh not coated wax 10 % and red ginger extract 30 % was used as control. Three replicates were used either on treatment or control. Water content of salak Pondoh, fruit hardness, total dissolved solid, respiration rate, weight loss, organoleptic test were determined using oven method, reometer, refractometer, closed system, gravimetric, and panelist test, respectively.

Twelve fungal isolates were found in salak Pondoh collected from seven traditional markets and supermarkets in Bogor. Nine isolates of them were Thielaviopsis paradoxa, three other isolates were Mucor sp. Geotricum sp. and Fusarium graminearum. Thielaviopsis. paradoxa was the most often isolated fungal species and it caused the disease on salak Pondoh. The most virulent isolate of T. paradoxa was PSYSII and its disease symptom was 2 010 mm². The result indicated that red ginger and turmeric extracts inhibited the growth of the T. paradoxa PSYSII at the concentration of 30 % or more, but red ginger extract was more potential to inhibit the fungal isolate (100 %) compared to turmeric extract (34 %). The use of 30 % ginger extract in combination with 10% waxing could maintain the quality of salak Pondoh at room temperature (28-29°C) and 65-75 % RH until 12 days of storage, while the control only up to 9 days of storage.

Keywords: Red ginger, salak Pondoh, turmeric, Thielaviopsis paradoxa