

**Kajian Potensi Asap Cair Pelet Kayu untuk Memperpanjang Umur
Simpan Cabai Merah Besar**

*Study on the Potential of Liquid Smoke Derived from Wood Pellet to Extend
the Shelf Life of Red Chili Peppers*

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ABSTRACT

The wood industry is a strategic sector that processes wood-based natural resources into functional furniture and various high-value products. According to Indonesia's Quarterly Forestry Data (2023), roundwood production reached 68.215 million m³, generating approximately 1.4 million m³ of sawdust waste from sawmill industries and 4.2 million m³ from plywood industries. A significant portion of this waste is processed into wood pellets, which can be utilized as raw material for liquid smoke production. This study aimed to determine the physicochemical characteristics of liquid smoke and evaluate the shelf life of coated red chili peppers. The experiment was conducted using red chili peppers coated with liquid smoke and stored at temperatures of 3°C, 29°C, and 35°C until the spoilage threshold was reached, as determined by mold and yeast counts, weight loss, and color changes. The results showed that the wood pellet liquid smoke met the quality requirements for Grade 1 lignocellulosic liquid smoke according to SNI 8985:2021, with a yield of 9.58%, a clear yellowish color, a specific gravity of 1.005129 g/mL, a pH of 2.29, a total phenol content of 1.8096%, an acetic acid content of 6.08005%, and no floating materials. The application of liquid smoke on red chili peppers was associated with the presence of phenolic, acidic, and carbonyl compounds, which play important roles in inhibiting the growth of molds and spoilage microorganisms, reducing respiration and transpiration rates, and delaying color deterioration. Based on the Arrhenius model, wood pellet liquid smoke coating demonstrated the potential to extend the shelf life of red chili peppers. The estimated shelf life of coated red chili peppers stored at 3°C, 29°C, and 35°C was 59 days, 2 hours, and 38 minutes; 51 days, 4 hours, and 41 minutes; and 47 days, 16 hours, and 51 minutes, respectively. According to the Arrhenius equation, the predicted shelf life of coated red chili peppers at 23°C, 25°C, 27°C, and 31°C was 55 days, 4 hours, and 32 minutes; 53 days, 15 hours, and 55 seconds; 52 days, 20 hours, and 6 minutes; and 45 days, 13 hours, and 21 minutes, respectively.

Keywords: Wood pellet waste liquid smoke, Red chili pepper, Coating, Shelf life, Arrhenius.