ARABICA COFFEE (*Coffea arabica* L.) SEED GERMINATION WITH HYDROGEN PEROXIDE (H_2O_2) TREATMENT AT DIFFERENT CONCENTRATION AND SOAKING DURATIONS

ABSTRACT

Arabica coffee (*Coffea arabica* L.) has high economic value, but the cultivation of seed procurement from Arabica coffee seeds is very rare due to the hard skin of Arabica coffee beans, causing longer dormancy, so a solution is needed to overcome this problem. Hydrogen peroxide (H_2O_2) is an oxidative free radical that can damage the seed coat, become a signal molecule for GA and ABA hormones, and activate enzymes that play a role in the germination process in seeds. This study aims to determine the effect of concentration and duration of soaking of H_2O_2 solution on the germination of Arabica coffee seeds. The study was conducted experimentally using a Completely Randomized Design (CRD) with two factors, namely H_2O_2 concentration (0, 20, 40, 60, and 80 mM) and soaking time (12, 24, and 36 hours). Each treatment with five replications. The method used was to germinate seeds that had been treated with concentration and soaking time in H_2O_2 solution on a 5-layer towel tissue medium, which was watered with 10 ml of distilled water every 2 days, for 60 days. The parameters observed included the day of radicle emergence, germination percentage and germination index, seed color, fresh weight, dry weight and water content of the sprouts. Data analysis used statistical analysis through the Two Way ANOVA Test followed by Duncan's Advanced Test. The results showed that a concentration of 60 mM with a soaking duration of 36 hours gave the lowest number on the day of radicle emergence, the highest number on the percentage of germination and germination index value. Conversely, treatment with a concentration of 80 mM showed a decrease in the vigor of Arabica coffee seeds. Thus, the use of H_2O_2 at a concentration of 60 mM and a soaking duration of 36 hours proved effective in accelerating the germination of Arabica coffee seeds.

Keywords: *dormancy, imbibition, signal molecules*