

## Studi kepekaan excised embryo benih rambutan (*Nephelium lappaceum* L) terhadap pengeringan dan kriopreservasi = Desiccation sensitivity study and cryopreservation of excised embryo of Rambutan (*Nephelium lappaceum* L) seeds

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### Abstrak

A research on the desiccation sensitivity and cryopreservation ability of rambutan excised embryo have been conducted. Excised embryo was desiccated into target moisture content of 30%, 25%, 20%, 15%, 10%. It was found that the critical level for moisture content is 20% with 60% viability, 7.431 % per etmal growth rate and 929  $\mu$ s electric conduction. The excised embryo with 20% moisture content was them soaked in 3 different protectant and stored in cryotube. The result showed that the temperature success storage was on -10°C for 10 hours with 95.7%-100% viability. Storage at -20°C the same soaking time (10 hours) gave only 10% viability. It is concluded that excised embryo of rambutan seeds will not be successful in cryopreservation. Rambutan (*Nephelium lappaceum* L) is a fruit native to the Malesian region. It has many botanical relatives including the "rambutan Irian or Matoa". Based on its storage characteristic the rambutan seeds are categorized into recalsitrant seed. This seed is unable to germinate when dried and stored at low temperature. However one of the best method known to store seeds is to put them in liquid nitrogen in a dry condition. This method is called cryopreservation and it is usually done after certain chemical have been added to the seeds as a tissue protectant. Based on this evidence a research on how rambutan seed could stand cryopreservation has been conducted.

Two kinds of laboratory procedure were done. The first was to investigate on how rambutan excised embryo could withstand drying. Excised embryo were desiccated into target moisture content of 30%, 25%, 20%, 15%, and 10%\_ The observation focus on parameter observed were the percentage of viability, growth rate and electric conductiveness, The result show, that excised embryo of rambutan seeds were still capable to germinate on 20% of water content with 60% viability, 7.431% per etmal growth rate and 929 Its value of electric conduction.

The second procedure aim to know the best protectants to be used as well as the lowest temperature that the excised embryo could withstand. The excised embryo were given three kinds of protectants, Le. sucrose, glycerol and combination of sucrose and glycerol, for 2,5,10,15 and 18 hours soaking time respectively. This lot of excised embryo was then divided into groups and each group were stared in -10°C and -20°C respectively.

Statistical analysis shows that the interaction between type of protectan and soaking time and storage at -10°C is significant for the value of  $p < 0.05$ . It was found that 10 hours soaking time of gave the best percentage of viability (with the application 100% sucrose, 96.7% glycerol, 96.7% combination of the chemical) and low value of electric conductiveness (43.33  $\mu$ s, 36.00  $\mu$ s and 35.67 $\mu$ s respectively). However the soaking time of 5, 15, and 18 hours did not give a good result, When stored at -20°C and 10 hours soaking

time of the viability went down to 6-10%. Other combination of soaking time gave 0% viability.

It can be then concluded that rambutan excised embryo can only be dried down to 20% moisture content without significant damage. Subsequent storage at - 20oC gave a survival level of 6-10% viability. However, a future investigation on its cryopreservation method is proposed.</i>