Microbial antagonism of *Pseudomonas fluorescens* and Bacillus subtilis to overcome *Ralstonia solanacearum* in potato seed production with an aeroponic system in Indonesia

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Abstract	Potato (Solanum tuberosum L.) seed production using the aeroponic system has been widely implemented in Indonesia. However, aeroponic systems in tropical areas such as Indonesia faced obstacles in the form of high wilt attacks caused by the bacteria Ralstonia solanacearum . This research aimed to control R. solanacearum wilt disease in an aeroponic system using various microbes. The research was carried out from September 2022 to January 2023. This research consisted of four stages, namely exploration and isolation of microorganisms, identification of microbial antagonism, testing of in vitro potential microbial antagonism and testing of selected microbial antagonism in the aeroponic system. The nutrients used in the aeroponic system contained R. solanacearum with a concentration of 10 4 CFU mL (-1) , while the concentration of the microbial solution used was 10 8 CFU mL (-1) . Pseudomonas fluorescence was consistently the best microbe both in vitro and in aeroponics, whereas Bacillus subtilis could only overcome wilt in vitro and could not overcome wilt in aeroponic system. Pseudomonas fluorescence required 5 min soaking time and could increase wilt with increasing soaking time. The consortium between B. subtilis and P. fluorescence with 10 min soaking time could overcome wilt by 85% and increase the number of tubers and tuber weight by 79% and 85%, respectively, so this prospective microbial consortium could be applied to aeroponic systems environmentally friendly in tropical areas with high R . solanacearum opportunities.
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