MIKROSPOROGENESIS, MIKROGAMETOGENESIS, VIABILITAS POLEN, DAN PERKEMBANGAN EMBRIO PADA *Hibiscus rosa-sinensis* L.

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ABSTRAK

Kendala reproduksi generatif *Hibiscus rosa-sinensis* L. berbunga merah muda adalah rontoknya buah sebelum biji mengalami kemasakan. Faktor penyebab rontoknya buah tersebut kemungkinan karena polen yang tidak viabel, embrio gagal berkembang, dan inkompatibilitas. Penelitian ini bertujuan untuk mengetahui proses mikrosporogenesis dan mikrogametogenesis, viabilitas polen, serta proses embriogenesis pada biji viabel dan tidak viabel. Proses mikrosporogenesis, mikrogametogenesis, dan perkembangan embrio dianalisis dari sediaan anatomis kuncup bunga, *androecioum,* serta biji pada berbagai tahap perkembangan yang dibuat dengan metode parafin. Uji viabilitas polen secara *in-vivo* dilakukan dengan metode *squash* dan pewarnaan *Aniline Blue-Lactophenol.* Uji viabilitas polen secara *in-vitro* dilakukan dengan cara polen ditumbuhkan pada medium Brewbaker & Kwack. Data yang diperoleh dianalisis secara deskriptif. Hasil penelitian ini menunjukkan bahwa proses mikrosporogenesis terjadi secara normal. Proses mikrosporogenesis menghasilkan tetrad mikrospora tipe tetrahedral dan isobilateral. Mikrospora terlepas dari tetrad menjadi empat mikrospora soliter. Pada proses mikrogametogenesis terbentuk polen normal dan polen abnormal. Polen normal masak dalam keadaan stadium dua sel, sedangkan polen abnormal gagal berkembang dan memiliki ukuran jauh lebih kecil dari polen normal. Hasil uji viabilitas polen secara *in-vivo* menunjukkan bahwa polen bersifat viabel (mampu berkecambah di atas stigma dan menembus jaringan stilus), sedangkan secara *in-vitro* nilai viabilitas polen adalah 0%. Hasil pengamatan perkembangan embrio menunjukkan bahwa embrio berkembang hingga masak pada biji viabel, dan embrio berhenti berkembang setelah tahap globuler pada biji tidak viabel.

Kata kunci : *Hibiscus rosa-sinensis* L., mikrosporogenesis, mikrogametogenesis, viabilitas, embriogenesis.

MICROSPOROGENESIS, MICROGAMETOGENESIS, POLLEN VIABILITY, AND EMBRYO DEVELOPMENT ON *Hibiscus rosa-sinensis* L.

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ABSTRACT

The obstacle on the generative reproduction of *Hibiscus rosa-sinensis* L. with pink flowers is the abscission of fruits before the seeds undergo maturity. The possible factors causing abscission are non-viable pollen, failure of embryo development, and incompatibility. This study aimed to know the microsporogenesis and microsporogenesis processes, pollen viability, and the embryogenesis process on viable and non-viable seeds. Microsporogenesis, microgametogenesis and embryogenesis process were analyzed using anatomical slides that were prepared by paraffin methode. In-vivo pollen viability test was conducted using squash methode with Aniline Blue-Lactophenol staining. Pollen were grown on Brewbaker & Kwack medium for in-vitro pollen viability test. The data were analyzed descriptively. The results showed that the microsporogenesis process occured normally. Microsporogenesis process resulted tetrads microspores. The tetrads are tetrahedral and isobilateral types. Microspores were separeted from the tetrad into four solitary microspores. The process of microgametogenesis produced normal and abnormal pollens. The normal pollen were detected to be mature at two cell stage. Abnormal pollens were failed to develop and become much smaller than normal pollen. The results of in-vivo pollen viability test showed that pollens were viable (pollen were able to germinate on the stigma and penetrate into inside the style tissue), while the value of in-vitro pollen viability was 0%. The results of observation on embryonic development showed that embryo can develop until mature on viable seeds, while they stopped to develop at an embryonic globular stage on non-viable seeds.

Keywords: *Hibiscus rosa-sinensis* L., microsporogenesis, microgametogenesis, viability, embryogenesis.