

ABSTRAK

UPAYA PENINGKATAN PERFORMA HORTIKULTURA ANGGREK *Dendrobium* MELALUI HIBRIDISASI ANTARA (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung*: STUDI KULTUR BIJI, PEMBESARAN *SEEDLING IN VITRO* DAN AKLIMATISASI

Oleh

EMI YUNIDA

Anggrek merupakan salah satu jenis tanaman hias yang memiliki nilai estetika tinggi. Salah satu upaya dalam peningkatan performa hortikultura anggrek *Dendrobium* yaitu melalui hibridisasi tetua-tetua anggrek yang memiliki sifat unggul dan dilanjutkan dengan perbanyakan biji-biji anggrek hasil silangan melalui kultur *in vitro*. Penelitian ini terdiri dari 2 percobaan. Percobaan I bertujuan untuk mempelajari pengaruh media dasar dan berbagai konsentrasi air kelapa ke dalam media kultur serta interaksi keduanya terhadap pengecambahan *in vitro* anggrek hasil hibridisasi (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung*. Biji anggrek didecambahkan pada 6 media perlakuan selama 8 minggu. Percobaan dilaksanakan dalam rancangan acak lengkap (RAL) dengan 4 ulangan. Perlakuan disusun secara faktorial 2x3, faktor pertama yaitu 2 jenis media dasar (MS dan pupuk lengkap NPK 32:10:10), sedangkan faktor kedua adalah konsentrasi air kelapa (0, 75 dan 150 ml/l). Setiap unit percobaan terdiri dari 1 botol kultur yang ditanami biji anggrek dalam jumlah yang diusahakan sama ($\pm 2,8$ mg). Percobaan II bertujuan untuk mempelajari pengaruh jenis adenda organik dan penambahan KNO_3 serta interaksinya terhadap pertumbuhan *seedling* anggrek hasil hibridisasi antara (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung in vitro*. Percobaan ini dilaksanakan dalam rancangan acak lengkap (RAL) dengan 3 ulangan. Perlakuan disusun secara faktorial (3x2), faktor pertama adalah tiga jenis adenda (kentang, tomat, dan pisang), sedangkan faktor kedua adalah KNO_3 (0 dan 2 g/l). Setiap unit percobaan terdiri dari 3 botol kultur yang berisi masing-masing 10 eksplan. Sebanyak 120 *Seedling* yang sudah memiliki tinggi ≥ 5 cm dengan minimal 4 helai daun dan 4 helai akar diaklimatisasi dengan sistem kompot (*community pot*) menggunakan media serabut sabut kelapa atau moss putih, 10 *seedling* per pot.

Hasil percobaan I menunjukkan bahwa semua kultur dengan media dasar pupuk lengkap NPK 32:10:10 menghasilkan perkecambahan biji dan pertumbuhan protokorm anggrek (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung*, baik dengan maupun tanpa penambahan air kelapa, sedangkan kultur biji di media MS semuanya tidak berkecambah (menghasilkan protokorm). Pemberian air kelapa sebanyak 150 ml/l menghasilkan skoring jumlah protokorm dan bobot 100 protokorm tertinggi, diikuti perlakuan air kelapa 75 ml/l dan tanpa penambahan air kelapa. Hasil percobaan II menunjukkan bahwa adenda kentang secara umum menghasilkan pertumbuhan *seedling* anggrek terbaik diikuti oleh adenda tomat dan adenda pisang. Pemberian KNO_3 2 g/l ke dalam media justru menekan pertumbuhan *seedling*, hal ini dapat dilihat hampir pada semua variabel pengamatan yaitu tinggi tanaman, jumlah akar, panjang akar, dan bobot segar tanaman. Semua *seedling* yang diaklimatisasi, baik dengan media serabut sabut kelapa maupun moss putih teraklimatisasi 100% setelah berumur 8 minggu sejak dikeluarkan dari botol.

Kata kunci : adenda, air kelapa, aklimatisasi, *Dendrobium*, KNO_3 , kultur biji, moss, MS, pupuk lengkap NPK (32:10:10), sabut kelapa, *seedling*.

ABSTRACT

EFFORTS TO IMPROVE HORTICULTURAL PERFORMANCE OF *Dendrobium* THROUGH HYBRIDIZATION BETWEEN (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung*: STUDY OF *IN VITRO* SEED GERMINATION, SEEDLING GROWTH AND PLANTLET ACCLIMATIZATION

By

EMI YUNIDA

Dendrobium, a member of Orchidaceae is a popular ornamental plants with high aesthetical value. Efforts to improve horticultural performance of *Dendrobium* orchids are always become the breeder's priority programmes. Hybridization between parent plants with novel characters followed by asymbiotic or *in vitro* seed germination is the most easiest way to get a new qualified hybrid. This study consisted of two consecutive experiments, i.e., (1) effects of basal media and various concentrations of coconut water on *in vitro* germination and protocorm growth of hybrid (*D. Wira Pride* x *D. sutiknoi*) x *D. Imelda Marina Masagung*; and (2) effects of organic addenda and the addition of KNO₃ on *in vitro* growth of the hybrid seedlings. The first experiment was conducted in a completely randomized design, replicated four times, with 6 treatments arranged in a (2x3) factorial. The first factor was two basal media formulation (MS and NPK 32:10:10 complete fertilizer), while the second factor was the concentrations of coconut water (CW) (0. 75 and 150 ml/l). Each experimental unit consisted of 1 culture bottle. Seeds of approximately the same amount (± 2.8 mg) from green mature pod of the hybrid *Dendrobium* were sowed on six media treatments and incubated under continuous fluorescence light of approximately 1000 lux, $26 \pm 2^{\circ}\text{C}$ for 8 weeks. The second experiment was also carried out in a completely randomized design, replicated thrice, with 6 treatments in a (3x2) factorial arrangement. The first factor was three types of medium addenda (potatoe extract, tomatoe juice, and banana homogenate), while the second factor was addition of KNO₃ (0 and 2 g/l). Each experimental unit consisted of 3 culture bottles, each of which containing 10 explants. After 12 weeks of cultures, seedling height, width of leaves, number of roots, length of roots and seedling fresh weight were recorded. Results of the first experiment showed that all cultures with

media consisted of complete fertilizer NPK 32:10:10 showed better seed germination and protocorm growth, compared to MS medium, in which all the seeds did not germinate and produce protocorm. Addition of CW at 75 and 150 ml/l significantly increased seed germination and protocorm growth, with the highest protocorm growth obtained at 150 ml/l CW. This results were showed by the highest score of the protocorm mass and weight of 100 protocorms at 150 ml/l CW, followed by 75 ml/l CW. The results of the second experiment showed that addition of potato extract generally produced the best orchid seedling growth, followed by tomato and banana. Addition of KNO₃ at 2 g/l into the media suppressed seedling growth, which was seen in almost all observation variables: plant height, number of roots, root length, and seedling fresh weight. Following those two experiments, the hybrid *Dendrobium* seedlings were subcultured onto medium consisted of NPK 32:10:10 complete fertilizer with 20 g/l sucrose, 100 ml/l CW, MS vitamins, 1 g/l tryptone, extract of 200 g/l potatoe and 1 g/l of activated charcoal for three months, and incubated under the same culture room above. At this stage, hundreds of seedlings with ≥ 5 cm height, 4-6 leaves and 4-6 roots were obtained. Among 120 seedlings acclimatized with coco-fiber or shagnum moss media in community pots *ex-vitro*, 100% of those seedlings were successfully grew well until 8 weeks.

Key words : acclimatization, addenda, coconut fiber, coconut water, *Dendrobium*, KNO₃, moss, MS, NPK complete fertilizer (32:10:10), seed culture, *seedling*.