

**KEANEKARAGAMAN FUNGI EKTOMIKORIZA DI HUTAN
PENDIDIKAN DAN PENELITIAN BIOLOGI (HPPB) UNIVERSITAS
ANDALAS DAN PENGARUH BEBERAPA FUNGI POTENSIAL
TERHADAP PERTUMBUHAN BIBIT KAYU PASANG
(*Lithocarpus urceolaris* (Jack) Merr.)**

DISERTASI

FESKAHARNY ALAMSJAH

05 301 006



Pembimbing:

Prof. Dr. Ir. Eti Farda Husin, M.S.

Prof. Dr. Deddi Prima Putra, Apt.

Prof. Dr. Erdi Santoso, M.S.

Prof. Dr. Syamsuardi, M.Sc.

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Oleh: FESKAHARNY ALAMSJAH

(Dibawah bimbingan: Prof. Dr. Eti Farda Husin, M.S., Prof. Dr. Erdi Santoso,
M.S., Prof. Dr. Deddi Prima Putra, Apt dan Prof. Dr. Syamsuardi, M.Sc.)

ABSTRAK

Hutan Pendidikan dan Penelitian Biologi (HPPB) adalah salah satu hutan tropis dataran rendah di Sumatera Barat berada di kampus Universitas Andalas Limau Manis. HPPB yang memiliki biodiversitas tinggi merupakan salah satu daerah kunci biodiversitas penting di Sumatra. HPPB tergolong hutan sekunder, ditandai banyak daerah terbuka serta spesies pionir, mengindikasikan telah mengalami gangguan sehingga perlu direhabilitasi. Kegiatan rehabilitasi memerlukan bibit berkualitas, memanfaatkan fungi ektomikoriza di hutan tropis. HPPB ketinggiannya 260 – 465 m dpl, tergolong unik, karena didominasi Fagaceae. Fenomena ini mungkin berkaitan dengan keberadaan fungi ektomikoriza indigenus. Keanekaragaman jenis fungi ektomikoriza yang ditemukan terdiri dari 16 jenis (*Scleroderma sinnamariense*, *S.columnare*, *S.citrinum*, *Amanita* sp1, *Amanita* sp2, *Amanita* sp3, *Amanita* sp4, *Amanita* sp5, *Laccaria* sp, *Lactarius* sp1, *Lactarius* sp2, *Lactarius* sp3, *Russula* sp1, *Russula* sp2, *R.cyanoxhanta*, *R.delica*). Hanya lima jenis yang mampu tumbuh pada media MMN: *S.sinnamariense*, *S.columnare*, *S.citrinum*, *Laccaria* sp dan *R.delica*, pada media MEA dan Pawlesky hanya *Scleroderma*. Lima jenis fungi tersebut mampu memacu pertumbuhan bibit *L.urceolaris*. *S. sinnamariense*, *S.columnare* dan *S.citrinum* yang dikulturkan pada media MMN padat memiliki kemampuan lebih besar memacu pertumbuhan bibit *L.urceolaris*. Kultur miselium ini dapat menjadi alternatif penyediaan inokulum fungi ektomikoriza tanpa mengandalkan tubuh buah di alam yang sangat tergantung musim. Tiga jenis *Scleroderma* ini berpotensi berasosiasi dengan bibit *L.urceolaris*. Hasil histologi akar, mantel terbentuk ada yang satu hingga tiga lapis, persentase kolonisasi 50 - 60%, ketebalannya hingga 300 μ . Inokulasi *S.sinnamariense* pada bibit *L.urceolaris* dengan naungan 65% merupakan yang terbaik meningkatkan pertambahan tinggi (474%), diameter (197%), dan jumlah daun (861%) terhadap kontrol, persentase kolonisasi 60%.

Keyword: Biodiversitas, fungi ektomikoriza, hutan tropis, mantel, Hartig net.

THE DIVERSITY OF ECTOMYCORRHIZAL FUNGI IN THE SCHOOL OF BIOLOGY FOREST (SBF) OF ANDALAS UNIVERSITY AND THEIR INFLUENCE ON THE GROWTH OF (*Lithocarpus urceolaris* (JACK) MERR.) SEEDLINGS

by: FESKAHARNY ALAMSJAH

(Supervised: Prof. Dr. Eti Farda Husin, M.S., Prof. Dr. Erdi Santoso, M.S., Prof. Dr. Deddi Prima Putra, Apt dan Prof. Dr. Syamsuardi, M.Sc.)

ABSTRACT

The School of Biology Forest (SBF) is one of the lowland tropical forest in West Sumatra that located near the campus of Andalas University, Limau Manis, Padang. SBF is one of the importance key areas of biodiversity in Sumatra due to it has a high biodiversity. SBF classified as the secondary forests with many open areas and many pioneer species were occurred which indicating there were been disturbed, so that it needs to be rehabilitated. For forest rehabilitation, the good quality of seedlings were required by using ectomycorrhizal fungi of tropical forests. SBF is unique area because of lowland tropical forest with altitude 260-465 m above sea level that dominated by by Fagaceous tree species . This phenomenon may be related to the presence of indigenous fungi ectomycorrhiza. The diversity of ectomycorrhizal fungi consist of 16 species (*Scleroderma sinnamariense*, *S.columnare*, *S.citrinum*, *Amanita* sp1, *Amanita* sp2, *Amanita* sp3, *Amanita* sp4, *Amanita* sp5, *Laccaria* sp, *Lactarius* sp1, *Lactarius* sp2, *Lactarius* sp3, *Russula* sp1, *Russula* sp2, *R.cyanoxhanta*, *R.delica*). From sixteen of ectomycorrhizal fungi found, only five species were able to grow on media MMN, those were: *S.sinnamariense*, *S.columnare*, *S.citrinum*, *Laccaria* sp and *R.delica*. But only three species of *Scleroderma* were able to gorwth on the MEA and the Pawlesky media. Five species of fungi (*S.sinnamariense*, *S.columnare*, *S.citrinum*, *Laccaria* sp and *R.delica*) were able to stimulate the growth of the seedlings *L.urceolaris*. These three species of *Scleroderma*, i.e.: *S. sinnamariense*, *S.columnare* and *S.citrinum* which cultured on solid MMN media had a greater ability to increase the growth of *L.urceolaris* seedlings. The mycelium cultures can be an alternative for supplying of ectomycorrhizal fungal inoculum, without depending on natural fruit body that strictly depending on the season. Those three species of *Scleroderma* is potentially associated with *L.urceolaris* seedlings. Furthermore, the results of analysis histology of roots indicated that one to three layers of the mantle were formed with their thickness were up to 300 μ . The percentage of their colonization were ranged from 50 to 60%. Inoculation *S.sinnamariense* on *L.urceolaris* seedlings with 65% shading was the best treatment for the growth with increasing the height of seedling up to 474%, stem diameter up to 197%, and number of leaves up to 861% compared to the controls, and the percentage of colonization was 60%.

Keyword: Biodiversity, ectomycorrhizal fungi, tropical forest, mantle, Hartig.net