

## **Identifikasi Kapang dari Manuskrip Kuno Berbahan Daluang Berdasarkan Analisis Sekuens Daerah ITS pada rDNA = Identification of Moulds from Old Manuscripts of Daluang Paper Based on ITS region of rDNA Sequence Analysis**

Roni Wongso, author

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### **Abstrak**

Penelitian ini bertujuan untuk mengidentifikasi 15 strain kapang dari lima manuskrip kuno berbahan kertas daluang asal perpustakaan Fakultas Ilmu Pengetahuan Budaya Universitas Indonesia (FIB UI) dan melakukan deskripsi morfologi kapang-kapang tersebut. Identifikasi dilakukan berdasarkan analisis sekuens daerah Internal Transcribed Spacers (ITS) rDNA dan pengamatan morfologi kapang dilakukan pada Czapek's Dox Agar (CDA). Primer forward ITS1 dan primer reverse ITS4 digunakan untuk amplifikasi daerah ITS rDNA.

Hasil elektroforesis produk PCR menunjukkan panjang daerah ITS dari 15 strain kapang tersebut bervariasi antara 500 pb--900 pb. Sebelas strain kapang memiliki homologi ITS rDNA dengan spesies terdekat *Aspergillus clavatus* Desm. (1 strain), *Aspergillus flavus* group (1 strain), *Aspergillus niger* van Tieghem (1 strain), *Penicillium citrinum* Thom (6 strain), *Penicillium janthinellum* Biourge (1 strain), dan *Penicillium oxalicum* Currie & Thom (1 strain) dan termasuk anggota ordo Eurotiales, kelas Plectomycetes, dari filum Ascomycota. Satu strain memiliki homologi ITS rDNA dengan spesies terdekat *Pseudocercospora* sp. (1 strain) dan termasuk anggota ordo Capnodiales, kelas Dothideomycetes, dari filum Ascomycota. Tiga strain kapang (*Penicillium* sp. FIB.PRI.6.1, *Fraseriella* sp. FIB.PRI.6.2, dan mycelia sterilia FIB.PRII.3) belum berhasil diidentifikasi hingga tingkat spesies.

.....The aims of this research were to identify 15 mould strains from five old manuscripts of daluang paper from the library of Fakultas Ilmu Pengetahuan Budaya Universitas Indonesia (FIB UI) and to describe their morphology. Identification was carried out based on analysis of Internal Transcribed Spacers (ITS) region of rDNA sequence. Observation of the mould's morphology was carried out on Czapek's Dox Agar (CDA). Forward primer ITS1 and reverse primer ITS4 were used to amplify the ITS region of rDNA. Gel electrophoresis results showed that the lengths of ITS region from 15 mould strains were on the range of 500 bp--900 bp.

Eleven strains showed ITS rDNA sequence similarities to *Aspergillus clavatus* Desm. (1 strain), *Aspergillus flavus* group (1 strain), *Aspergillus niger* van Tieghem (1 strain), *Penicillium citrinum* Thom (6 strains), *Penicillium janthinellum* Biourge (1 strain), *Penicillium oxalicum* Currie & Thom (1 strain). The strains belong to order Eurotiales, Class Plectomycetes, phylum Ascomycota. One strain showed ITS rDNA sequence similarity to *Pseudocercospora* sp. (1 strain). The strain belongs to order Capnodiales, class Dothideomycetes, phylum Ascomycota. Three strains (*Penicillium* sp. FIB.PRI.6.1, *Fraseriella* sp. FIB.PRI.6.2, and mycelia sterilia FIB.PRII.3) were unable to be identified to species level.