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Uji Kelayakan Buku Ajar Mikrobiologi Untuk Identifikasi Kontaminasi Mikroorganisme Pada Eksplan Pisang Barangan (*Musa Acuminata* Linn.)

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Abstrak :

Kontaminasi mikroorganisme merupakan kendala utama dalam kultur jaringan tanaman karena dapat menghambat pertumbuhan eksplan hingga menyebabkan kematian dan sumber kontaminasi kompleks. Penelitian ini bertujuan mengidentifikasi mikroorganisme kontaminan pada eksplan pisang Barangan (*Musa acuminata* Linn.), untuk menganalisis uji kelayakan materi dan media buku ajar mikrobiologi. Penelitian menggunakan metode kualitatif untuk mengidentifikasi mikroorganisme dan morfologinya, sedangkan metode kuantitatif menggunakan persentase untuk uji kelayakan materi dan media dari buku ajar mikrobiologi. Penelitian ini dilakukan di laboraturium kultur jaringan dinas pertanian Aceh dan laboraturium mikrobiologi prodi pendidikan biologi, dilakukan di bulan Juli 2026. Sampel berupa eksplan pisang barangan (*Musa acuminata* Linn.) pada tahap multiplikasi, sebanyak 4 botol eksplan dari laboraturium kultur jaringan dinas pertanian Aceh. Isolasi dan identifikasi dilkukan di laboraturium mikrobiologi UIN Ar-raniry dengan menggunakan media *Nutrient Agar* (NA) dan *Potato Dextrose Agar* (PDA). Identifikasi dilakukan berdasarkan karakter makroskopis dan mikroskopis meliputi bentuk, warna, tekstur, tepian, elevasi koloni, pewarnaan Gram, serta struktur hifa dan spora. Hasil penelitian praktikum identifikasi bakteri kontaminan berasal dari genus *Pseudomonas* sp., *Enterobacter* sp., *Staphylococcus* sp., *Acetobacter* sp., *Micrococcus* sp., dan kelompok *Enterobacteriaceae*. Jamur yang ditemukan Dalam

kelompok *Aspergillus* sp., *Penicillium* sp., dan *Rhizopus* sp. Hasil uji kelayakan materi dan media buku ajar mikrobiologi 73,01%

Keywords: tissue culture, Barangan banana, microbial contamination, bacteria, fungi, microbiology practicum.

Abstract

Microbial contamination is a major challenge in plant tissue culture, as it can inhibit explant growth, lead to mortality, and stem from complex sources. This study aimed to identify contaminating microorganisms in Barangan banana (Musa acuminata Linn.) explants and to assess the content and media suitability of a microbiology textbook. A qualitative method was employed to identify the microorganisms and their morphology, while a quantitative method—using percentage scores—was used to evaluate the textbook's content and media. The study was conducted in July 2026 at the Aceh Agriculture Office's tissue culture laboratory and the Biology Education study program's microbiology laboratory. The samples consisted of Barangan banana (Musa acuminata Linn.) explants at the multiplication stage, comprising four culture bottles obtained from the Aceh Agriculture Office. Isolation and identification were performed at the UIN Ar-Raniry microbiology laboratory using Nutrient Agar (NA) and Potato Dextrose Agar (PDA) media. Identification was based on macroscopic and microscopic characteristics, including colony shape, color, texture, margin, and elevation, as well as Gram staining and hyphal and spore structures. The results identified contaminating bacteria belonging to the genera Pseudomonas, Enterobacter, Staphylococcus, Acetobacter, and Micrococcus, as well as the Enterobacteriaceae family. Fungi identified included members of the genera Aspergillus, Penicillium, and Rhizopus. The suitability assessment of the microbiology textbook's content and media yielded a score of 73.01%.