Variasi Medium Pertumbuhan Dan Pengujian Aktivitas Antimikroba Rare Actinobacteria Termofilik Dari Tanah Di Kawasan Geotermal Cisolok, Jawa Barat = Variation of Growth Media and Screening for Antimicrobial Activity of Thermophilic Rare Actinobacteria From Soil In Cisolok Geothermal Area, West Java

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Abstrak

Penelitian ini bertujuan untuk memperoleh informasi mengenai pengaruh variasi medium pertumbuhan terhadap pembentukan miselium aerial dan aktivitas antimikroba delapan isolat rare Actinobacteria termofilik dari tanah di sekitar geiser Cisolok, Jawa Barat. Pengujian pertumbuhan, pembentukan miselium aerial, dan aktivitas antimikroba dilakukan dengan menumbuhkan isolat pada medium ISP 1 agar, ISP 1 gellan gum, ISP 2 agar, ISP 2 gellan gum, ISP 3 agar, ISP 3 gellan gum, Bennettâs agar, Bennettâs gellan gum, Minimal (Mm) 3 agar, Mm 3 gellan gum, 2% agar, dan 2% gellan gum. Isolat kemudian diinkubasi pada suhu 45 Â°C selama 7 dan 14 hari. Konfirmasi suhu pertumbuhan menunjukkan 2 isolat dapat tumbuh hingga suhu 45 Â°C dan 6 isolat dapat tumbuh hingga 50 Â°C. Hasil pengujian variasi medium pertumbuhan menunjukkan semua isolat rare Actinobacteria dapat menghasilkan miselium substrat pada semua medium. Hasil pengamatan setelah inkubasi selama 7 hari pada suhu inkubasi 45 Â°C menunjukkan isolat-isolat tersebut dapat menghasilkan miselium aerial pada medium ISP 1 agar (2 isolat), Mm 3 agar (3 isolat), 2% agar (5 isolat), dan 2% gellan gum (5 isolat). Hasil pengamatan setelah inkubasi selama 14 hari menunjukkan isolat-isolat tersebut dapat menghasilkan miselium aerial pada medium ISP 1 gellan gum (2 isolat), ISP 2 agar (1 isolat), ISP 2 gellan gum (3 isolat), ISP 3 agar dan gellan gum (2 isolat), Mm 3 agar 3 isolat, dan Mm 3 gellan gum (3 isolat). Hasil pengujian aktivitas antibakteri menunjukkan isolat SL3-2-R-11 yang ditumbuhkan pada medium ISP 3 gellan gum dan SL3-1-R-7 yang ditumbuhkan pada Bennettâs agar selama 7 hari dapat menghambat pertumbuhan Staphylococcus aureus. Hasil pengujian aktivitas antikhamir menunjukkan isolat SL3-2-R-11 yang ditumbuhkan pada medium ISP 3 gellan gum dan SL3-1-R-7 pada medium Bennettâs agar selama 14 hari dapat menghambat pertumbuhan Candida albicans. Hasil pengujian aktivitas antifungi menunjukkan tidak ada isolat yang dapat menghambat pertumbuhan Aspergillus flavus.

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This study aims to obtain information about the effect of growth medium variations on the formation of aerial mycelium and antimicrobial activity of eight thermophilic rare Actinobacteria isolates from the soil around Cisolok geyser, West Java. The ability to grow at various media, aerial mycelium formation, and antimicrobial activity were carried out by growing isolates on medium ISP 1 agar, ISP 1 gellan gum, ISP 2 agar, ISP 2 gellan gum, ISP 3 agar, ISP 3 gellan gum, Bennettâs agar, Bennettâs gellan gum, Minimum (Mm)

3 agar, Mm 3 gellan gum, 2% agar, and 2% gellan gum. The isolates were then incubated at 45 oC for 7 and 14 days. Growth test at various temperatures showed that two isolates could grow at a temperature of 45 oC and six isolates could grow up to 50 oC. The results of the growth medium variation test showed that all rare Actinobacteria isolates could produce substrate mycelium in all mediums. Observations after incubation for 7 days at 45 Â°C showed that these isolates could produce aerial mycelium on ISP 1 agar medium (2 isolates), Mm 3 agar (3 isolates), 2% agar (5 isolates), and 2% gellan gum (5 isolates). Observations after incubation for 14 days showed that these isolates could produce aerial mycelium on the medium ISP 1 gellan gum (2 isolates), ISP 2 agar (1 isolate), ISP 2 gellan gum (3 isolates), ISP 3 agar and gellan gum (2 isolates), Mm 3 agar 3 isolates, and Mm 3 gellan gum (3 isolates). The results of antibacterial activity test showed that isolates SL3-2-R-11 grown on ISP 3 gellan gum and SL3-1-R-7 grown on Bennettâs agar for 7 days could inhibit the growth of Staphylococcus aureus. The antifungal activity test of isolates SL3-2-R-11 grown on ISP 3 gellan gum medium and SL3-1-R-7 on Bennettâs agar for 14 days showed inhibition towards Candida albicans. Meanwhile, all isolates did not show antifungal activity against Aspergillus flavus