Penapisan isolat kapang amilolitik dan khamir penghasil alkohol dari ragi tapai asal Kalimantan, Sulawesi, dan Sumatera = Screening of amylolytic molds and alcohol-producing yeasts of ragi tapai from Kalimantan, Sulawesi, and Sumatera

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Abstrak

ABSTRAK
Penelitian mengenai aktivitas amilolitik kapang dan sakarolitik khamir penghasil alkohol dari ragi tapai telah dilakukan. Sebanyak 22 isolat kapang dan 10 isolat khamir berhasil diisolasi dari ragi tapai yang berasal dari 5 daerah berbeda, yaitu Aceh, Bengkulu, Medan, Pontianak, dan Sulawesi. Penapisan isolat kapang secara kualitatif dan semi-kuantitatif dilakukan dengan metode iodin. Aktivitas amilase kapang secara kualitatif ditentukan berdasarkan ukuran zona bening setelah diteteskan dengan pereaksi iodin. Penapisan aktivitas amilase secara semi-kuantitatif diukur dengan spektrofotometer pada 620 nm. Hasil penapisan secara kualitatif menunjukkan bahwa isolat ZMDN1, ZMDN2, dan ZRS1 masing-masing memiliki diameter zona bening yang sama sebesar 85 mm. Penapisan secara semi-kuantitatif menunjukkan bahwa isolat ZMDN1 dan ZRS1 memiliki nilai transmitan (T) sebesar 96%, sedangkan isolat ZMDN2 memiliki nilai transmitan (T) sebesar 45%. Aktivitas amilase tiga isolat kapang terpilih diukur lebih lanjut menggunakan metode Dinitrosalicyclic Acid (DNS). Hasil menunjukkan bahwa isolat ZMDN1 memiliki nilai aktivitas amilase tertinggi sebesar 8,53 U/mL sedangkan aktivitas terendah, 4,88 U/mL dihasilkan oleh isolat ZRS1. Berdasarkan pengamatan karakter morfologi makroskopis dan mikroskopis, ketiga isolat kapang terpilih diduga merupakan anggota genus Amylomyces. Hasil penapisan khamir berdasarkan pertumbuhan sel dan pembentukan gas CO2 di dalam tabung Durham menunjukkan bahwa ketiga isolat khamir YPN2, YBKL1, dan YPN1 mampu tumbuh baik pada medium PDB dengan penambahan 15% glukosa. Produksi alkohol berdasarkan pembentukan CO2 oleh YPN2 telah terlihat dalam 24 jam, sementara isolat khamir YBKL1 dan YPN1 terlihat dalam 48 jam. Ketiga isolat khamir terpilih diduga merupakan anggota filum Ascomycota berdasarkan karakter morfologi dan kemampuan memfermentasi glukosa untuk menghasilkan alkohol dan CO2.
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ABSTRACT
A research on screening of amylolytic molds and saccharolytic yeasts from ragi tapai has been done. Twenty two isolates of mold and ten isolates of yeast were isolated from ragi tapai originating from five regions in Indonesia. The five regions are Aceh, Bengkulu, Medan, Pontianak, and Sulawesi. Qualitative and semi-quantitative screening of mold isolates were carried out by iodine method. The amylase activity of molds were qualitatively determined based on the formation of clear zones after flooding with iodine reagent. Semi-quantitative screening of amylase activity was measured by spectrophotometer based on the highest transmittance value at 620 nm. Qualitative screening results showed that ZMDN1, ZMDN2, and ZRS1 isolates have the same clear zone diameter of 85 mm. Semi-quantitative screening showed that ZMDN1 and ZRS1 isolates have 96% transmittance value, whereas ZMDN2 isolates has 45% transmittance value. Based on the screening results, the three mold isolates were thought to have the highest amylase activity. The

amylase activity of the three selected molds was measured further using the Dinitrosalicyclic Acid (DNS) method. The highest amylase activity value was produced by ZMDN1 isolate (8.53 U/mL), while the lowest amylase activity value was produced by ZRS1 isolate (4.88 U/mL). Based on the macroscopic and microscopic morphological characteristics, the three selected isolates belong to the genus Amylomyces. Yeast screening results based on cell growth and formation of CO2 gas in Durham tubes showed that the three yeast isolates were able to grow well on the PDB medium with the addition of 15% glucose. Alcohol production based on CO2 formation by YPN2 was detected in 24 hours, while YBKL1 and YPN1 was detected in 48 hours. The three selected yeast isolates are members of the phylum Ascomycota, based on morphological characteristic and ability to ferment glucose to produce alcohol and CO2.