

## KARAKTERISASI STRAIN BAKTERI BERPIGMENT BERDASAR SIFAT MORFOLOGIS, BIOKIMIA, DAN FISIKOKIMIAWI ZONA INTERTIDAL PANTAI SADRANAN GUNUNGKIDUL dan KALIBIRU YOGYAKARTA

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### INTISARI

Penelitian mengenai karakterisasi, klasifikasi, dan identifikasi enam strain bakteri berpigmen yang diisolasi dari zona intertidal Pantai Sadranan Gunungkidul dan Kalibiru Yogyakarta telah dilakukan. Karakterisasi secara fenotipik meliputi karakter morfologi kolonial, morfologi selular, sifat biokimiawi, serta analisis komponen pigmen intraselular. Klasifikasi enam strain bakteri secara numerik-fenetik dilakukan dengan 107 karakter berdasarkan indeks similaritas *simple matching coefficient* ( $S_{SM}$ ) dan *Jaccard coefficient* ( $S_J$ ) serta algoritme pengklasteran UPGMA. Identifikasi dilakukan dengan metode *matching profile* antara hasil karakterisasi keenam strain SdrW-001, SdrW-002, SdrW-003, SU-6, SU-7, dan SU-8 secara berturut-turut dengan karakter kunci deskripsi genera *Roseobacter*, *Xanthobacter*, *Erythrobacter*, *Roseateles*, *Flavobacterium* dan *Pseudomonas* berdasarkan *Bergeys Manual of Determinative Bacteriology*. Hasil penelitian menunjukkan bahwa pola dendrogram  $S_{SM}$  dan  $S_J$  secara berturut-turut menghasilkan 3 dan 6 spesies menurut definisi konsep taksospecies. Kehadiran pigmen bakterioklorofil-*a* (Bchl-*a*) dan karotenoid menunjukkan bahwa strain SdrW-001, SdrW-003, dan SU-6 berturut-turut teridentifikasi sebagai strain anggota genus *Roseobacter*, *Erythrobacter*, dan *Roseateles* yang merupakan kelompok bakteri AAP. Sifat anaerobik fakultatif dan kehadiran pigmen karotenoid yang teramati pada strain SU-7 dan SU-10 menunjukkan bahwa keduanya diduga kuat sebagai bakteri anggota alpha-Proteobacteria yang teridentifikasi secara berturut-turut sebagai strain anggota genus *Flavobacterium* dan *Pseudomonas*. Strain SdrW-002 di lain pihak memiliki kecocokan dengan deskripsi genus *Xanthobacter*. Dengan demikian dapat disimpulkan bahwa keanekaragaman strain bakteri berpigmen zona intertidal Pantai Sadranan dan Kalibiru Yogyakarta terdiri atas genera *Roseobacter*, *Xanthobacter*, *Erythrobacter*, *Roseateles*, *Flavobacterium*, dan *Pseudomonas*.

Kata kunci : Karakterisasi, Klasifikasi, Identifikasi, *Roseobacter*, *Xanthobacter*, *Erythrobacter*, *Roseateles*, *Flavobacterium*, dan *Pseudomonas*

## Characterization of Marine and River Pigmented Bacteria Based On Morphological, Biochemical, and Psychochemical Characters From Sadranan Intertidal Zone Gunungkidul and Kalibiru Yogyakarta

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### ABSTRACT

Research concerning isolation, characterization, classification, and identification of three marine pigmented bacterial strain and three river pigmented bacteria isolated from Sadranan intertidal zone Gunungkidul and Kalibiru River Yogyakarta was conducted. Characterization by phenotypic characters include colonial morphology, cellular morphology, biochemical tests, and intracellular pigmen analysis. Numerical-phenetic clasification on six bacterial strain was carried out using 120 characters analysed by simple matching ( $S_{SM}$ ) and Jaccard ( $S_J$ ) similarity indices with unweighted pair-group method with arithmethic mean (UPGMA) clustering method. Identification was carried out using *matching profile* method between the six strains, namely SdrW-001, SdrW-002, SdrW-003, SU-006, SU-007, and SU-010 with character descriptions of the genera *Roseobacter*, *Xanthobacter*, *Erythrobacter*, *Roseateles* *Flavobacterium*, dan *Pseudomonas* respectively according to *Bergeys Manual of Determinative Bacteriology*. Result showed that the dendograms yielded three and six species calculated with  $S_{SM}$  and  $S_J$  respectively based on the definition of taxospecies concept. Presence of bacteriochlorophyll-*a* (Bchl-*a*), carotenoids, as well as other biochemical tests in strain SdrW-001, SdrW-003, and SU-007 were in match with key characters of the genera *Roseobacter*, *Erythrobacter*, and *Roseateles* genera which are members of *aerobic anoxygenic phototroph* (AAP). Presence of yellowish colony color and marine sediment habitat made SdrW-002 in match with key characters of the genus *Xanthobacter*. Freshwater pigmented bacteria non Bchl-*a* are identified *Flavobacterium* and *Pseudomonas*. Therefore, it can be concluded that the diversity of pigmented bacteria isolated from Sadranan Intertidal zone Gunungkidul Yogyakarta were consist of *Roseobacter*, *Xanthobacter*, *Roseateles*, *Erythrobacter*, *Flavobacterium*, and *Pseudomonas*.

Keywords : Characterization, Clasification, Identification, *Roseobacter*, *Xanthobacter*, *Erythrobacter*, *Roseateles*, *Flavobacterium* and *Pseudomonas*.