

Supplementary Materials

Comparison of Petroleum Hydrocarbons Degradation by *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*

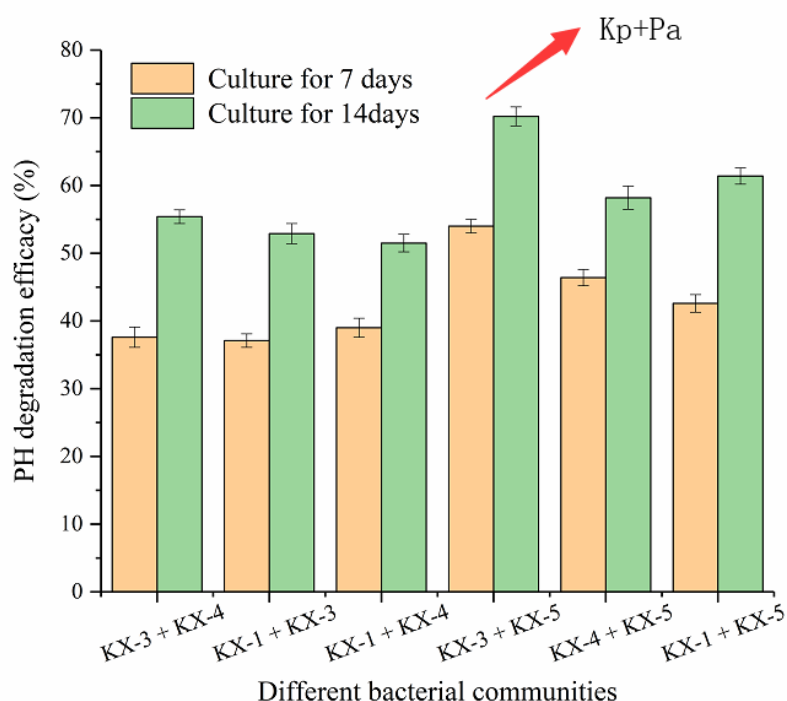


Figure S1. PH degradation efficacy of different bacterial communities in mineral medium with 1.5% (v/v) diesel as sole carbon source.

Four strains of KX-1, KX-3 (Kp), KX-4 and KX-5 (Pa) were screened and constructed in equal proportions. The results showed that the combined efficiency of KX-3 and KX-5 (Kp + Pa) was the highest, and its degradation efficiency was 54.6% and 70.2% at 7d and 14d, respectively.

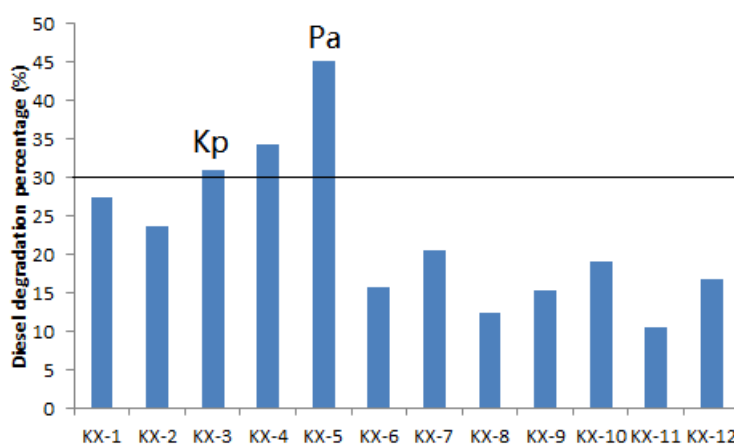


Figure S2. Growth characterization and degradation of isolated strains in mineral medium with 1.5% (v/v) diesel after 7 days' cultivation.

Bacteria strains were pre-activated in LB medium and then enriched to OD₆₀₀ of 1.5% (*v/v*) diesel-containing medium. Then they were cultured in shaking medium at 30 °C and 180 rpm. After 7 days, the degradation efficacy of petroleum hydrocarbons was measured. The degradation efficacy of Pa was 45.2%, while that of Kp was only 31.0%.

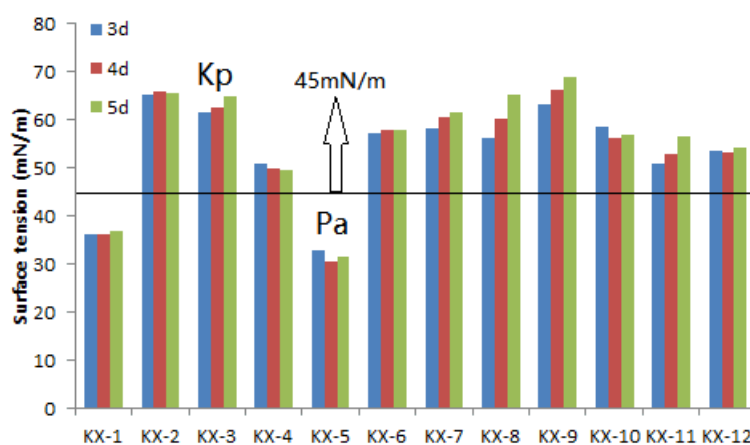


Figure S3. Surface tension measurements of bacterial strains at different times.

It is generally believed that strains that can reduce the surface tension of liquid to less than 45 mN/m can be regarded as surfactant-producing bacteria. After fermentation for 3, 4 and 5 days, the surface tension of most of the above 10 strains was still above 50 mN/m. Only KX-1 and KX-5 (Pa) met the requirements and belonged to surfactant-producing strains, while KX-3 (Kp) did not.

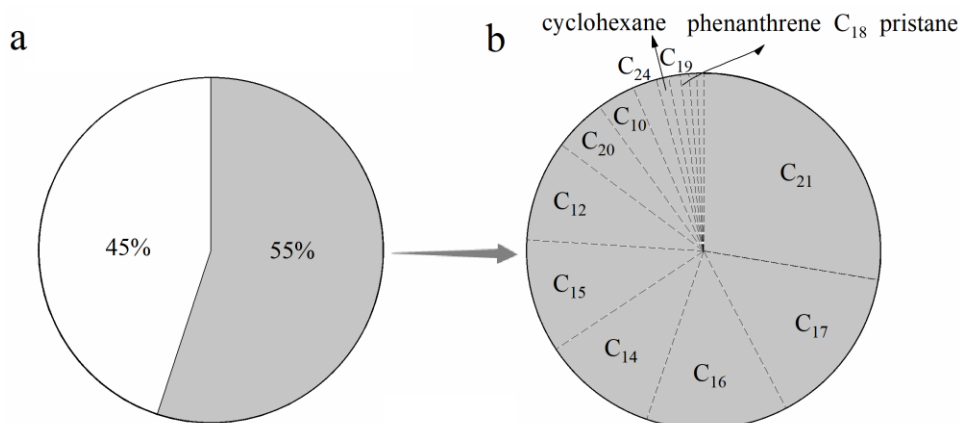


Figure S4. Pie charts of diesel main constituents (a) and those selected as experimental materials (b).

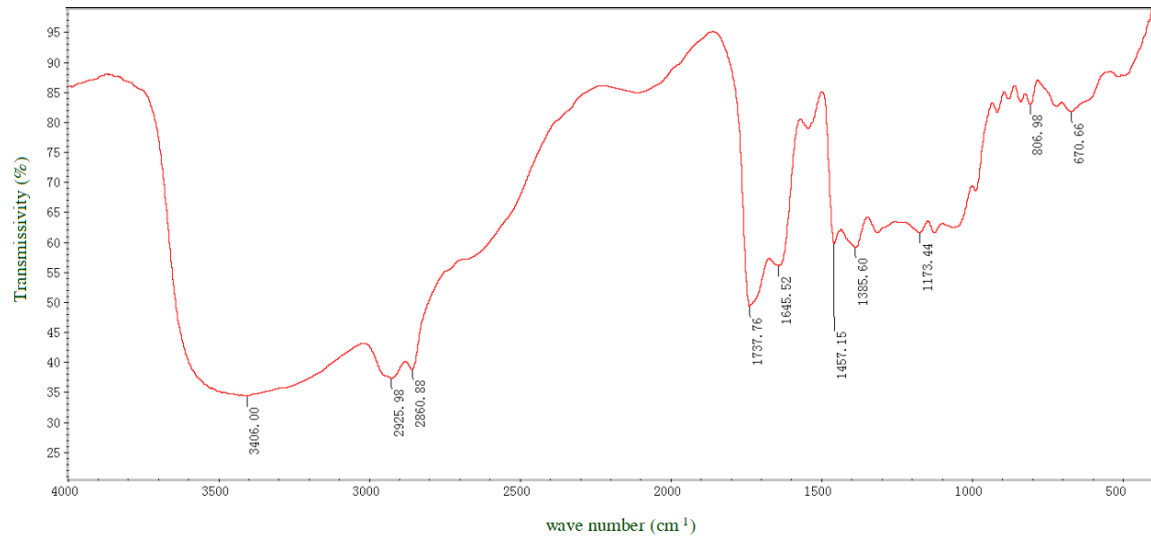


Figure S5. Fourier transform infrared (FTIR) spectroscopy spectrum of the bacterial secretions.

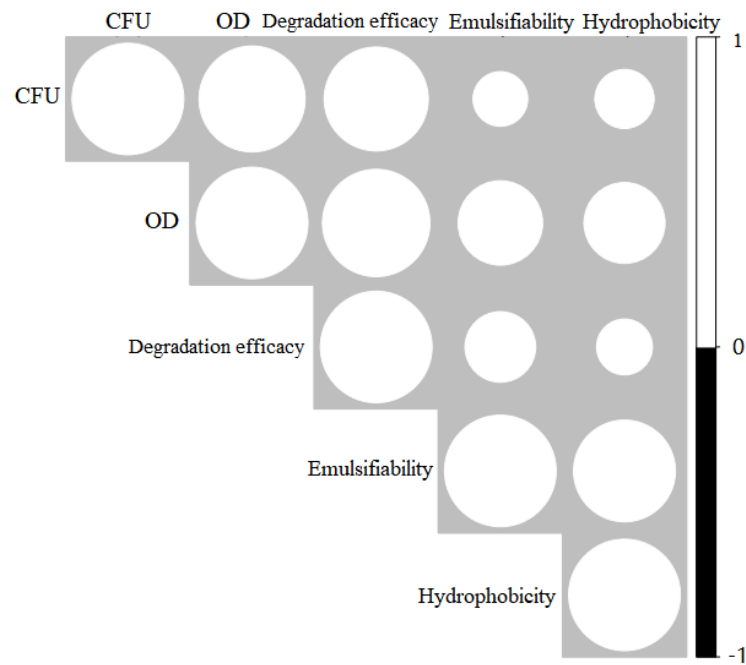


Figure S6. Relationships among CFU, OD₆₀₀, emulsifiability, hydrophobicity and microbial growth at the 0.05 level. Circles in white and black indicated positive and negative Spearman correlation coefficients, respectively.

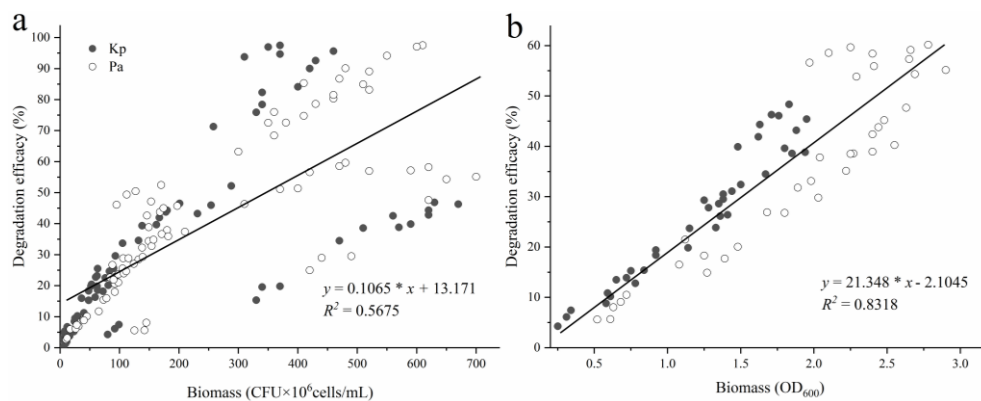


Figure S7. Relationships between degradation efficacy and CFU (a) and OD₆₀₀ (b).

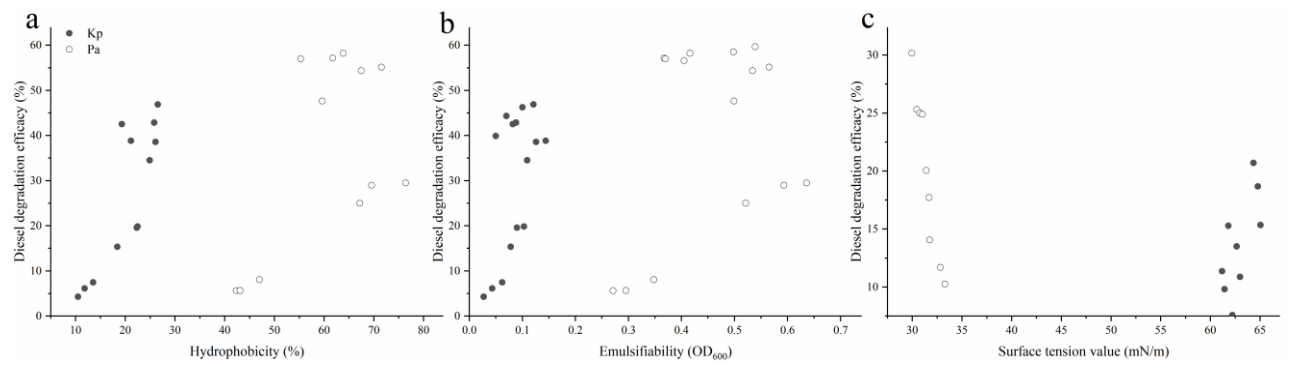


Figure S8. Relationship between degradation efficacy and hydrophobicity (a), emulsifiability (b) and surface tension value (c).

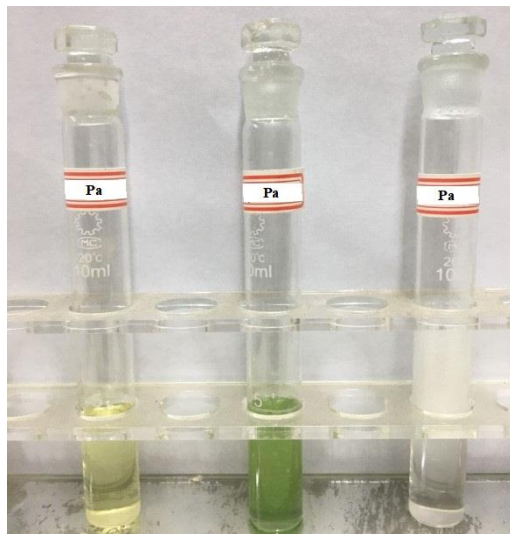


Figure S9. Biochemical tests of the bacterial secretions of the Pa strain.

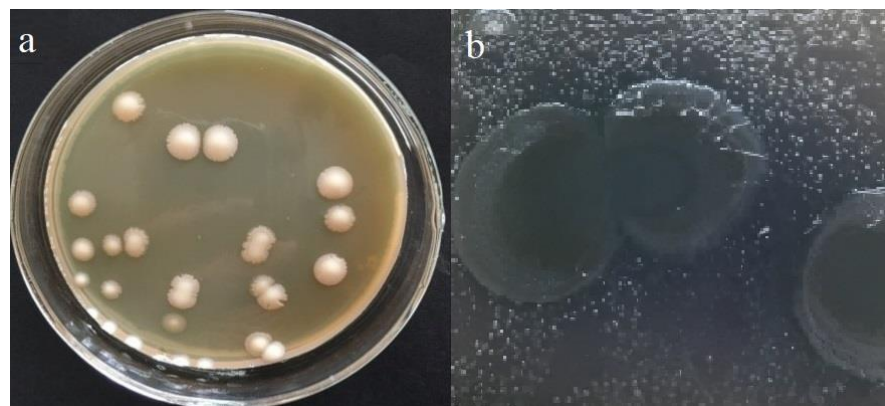


Figure S10. Morphology of the Kp strain (a) and Pa (b) in LB medium with pH 7.4.

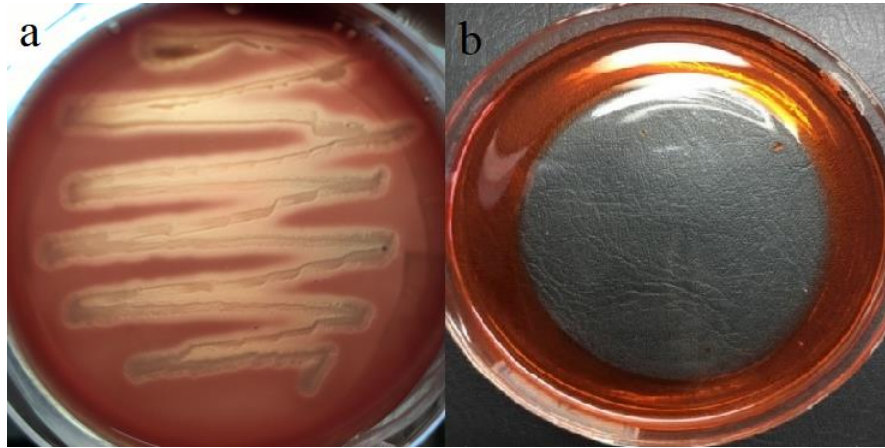


Figure S11. Diesel drain ring formed by Pa (a) and the hemolysin formed by Pa on the blood plate (b).