

Optimization of heterocyclic compounds degradation using Antarctic isolated bacteria strain BS19

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As the number of human travelers to Antarctica increases every year, so does the pollution the environment.

As a result of the use of ships and airplanes, as well as electronic equipment in Antarctica, pollution caused heterocyclic compounds such as fluorene and carbazole, dibenzofuran and dibenzothiophene is a concern. Previously, Include the genus for this strain because we already sequenced it. Strain BS19 was isolated from Antarctic soil for bioremediation applications in Antarctica.

Our study was conducted using six strains of hydrophilic bacteria isolated from soil on King George Island, Antarctica. Studies have confirmed that BS19 can grow at temperatures ranging from 10 to 35°C but growth is inhibited at 5°C. Strain BS19 also degraded carbazole well at low temperatures. In order to find an effective and low environmental impact bioremediation method to solve the problem of environmental pollution in Antarctica.

This study aims to analyze the ability of BS19 strain to degrade fluorene, carbazole (CAR), dibenzofuran (DBF) and dibenzothiophene (DBT), and evaluate the potential of BS19 strain for bioremediation applications in Antarctic and other cold environments.

Firstly, strain BS19 was inoculated into mineral medium (MSM) containing 0.1% (w/v) of fluorene, carbazole and dibenzothiophene, respectively, and incubated at 15°C for 1 week. Three samples were prepared under the same culture conditions and the-residual compounds-was extracted determined by GC-FID. Results showed promising degradation activity over 10 days period. At the same time, bacterial growth was confirmed during the degradation period.

This study confirms-usefulness of strain BS19 for bioremediation applications. In the future, effects of factors such as pH, temperature, and mixture-of compounds will be investigated.

References

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