

DEHP degrading bacteria isolated from Antarctica

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Plasticizers are widely used in the processing of plastics. Plasticizers are persistent and they are known to have an adverse effect on ecosystems when eluted from plastics into the environment. Di(2-ethylhexyl)(DEHP) is the most used plasticizer, and bacteria had been reported to degrade it recently. It was reported *Bacillus mojavensis* completely degrades DEHP in 2018¹. The purpose of this study is to isolate DEHP degrading bacteria from Antarctic soil and to investigate its chemical properties, DEHP degrading ability, and protein concentration in the medium.

DEHP was added to the mineral salt medium to a final concentration of 0.1% and incubated by shaking. As a result of the culture, isolated bacteria showed Gram-positive rod-shaped. This isolate was designated as strain HP5. HP5 showed positive response in catalase test. Furthermore, it showed negative response in oxidase test, indole test and motility test. To evaluate the biodegradation rate of DEHP, it was incubated for 168h. The number of viable bacteria was measured by the CFU counting method and the concentration of DEHP after 48h was analyzed by gas chromatography. The DEHP completely degraded after 120h. Furthermore, the number of bacteria peaked at 72h and started to decrease gradually after 120h. Protein concentrations of uninoculated medium were measured at 0.01551µg/mL, and that of HP5 inoculated medium were measured at 0.2171µg/mL. These results confirmed that the strain HP5 has the ability to degrade DEHP.

References

- 1) Jingfan Zhang, Chengnan Zhang, Yunping Zhu, Jinlong Li, Xiuting Li, (2018), Biodegradation of seven phthalate esters by *Bacillus mojavensis* B1811, International Biodeterioration & Biodegradation 132, 200-207, doi:10.1016/j.ibiod.2018.04.006