

ABSTRACT

The isolation and cultivation of indigenous bacteria poses a great importance for examining potential biodegradation microorganisms for a contaminated site. While the traditional method utilized for the isolation and cultivation method of bacteria has significant limitations and drawbacks, this study proposed the usage of a microwell array device that is able to isolate different bacteria at once. The aim of this study is to isolate diverse bacteria through the utilization of microarray device and further assess them for their potential naphthalene-degrading abilities. Inoculums were isolated from a sediment sample from Ardour River, France, through the usage of the microarray device that was further analyzed for their potential naphthalene degrading abilities by incubating them within ONR7a medium and naphthalene for 15 days at 30 °C. The isolated inoculums were further plated onto ONR7a agar with naphthalene and R2A agar to observe their diversity. A total of 12 inoculums from T1-ext microdevice and 20 inoculums from T3-ext microdevices were obtained where 1 inoculum (T3A8) shows a naphthalene degradation of up to 86%. Through plating the inoculums, 11 different colonies were observed from the inoculums isolated from both T1-ext and T3-ext microdevices, whereby only 6 different colonies were observed from the enrichment cultures. Although further research is still needed to conclude whether the microdevice serves as a better alternative than traditional methods, this research still show promising results of the usage of the microdevice for the isolation of bacteria.

Keywords: Microwell array device, bacteria, environmental sample, naphthalene, biodegradation