

13th International Conference on

Microbial Interactions & Microbial Ecology

July 19-20, 2018 | Rome, Italy

Rubber Gloves Biodegradation by a Natural Soil Consortium

Kamontam Umsakul¹, Chairat Nawong and Prachparin Janvadee

Prince of Songkla University, Faculty of Science, Department of Microbiology, Hat-Yai, Songkhla, Thailand

An increasing production of natural rubber (NR) products has led to major challenges in waste management since the degradation of NR is normally extremely slow. In this study, the degradation of rubber latex gloves in a mineral salt medium (MSM) using a natural soil consortium was studied. Soil consortia can degrade rubber gloves much more quickly than those of the single culture using the same conditions. The weight loss of the rubber gloves after incubation with a soil consortium of up to 14 days was as high as 59%. In contrast with using a single strain, only 9% of rubber glove weight loss was obtained. Determination of carbon dioxide evolution and viable cell number during cultivation with rubber gloves as a sole carbon source, revealed mineralization of the rubber materials during the increase of biomass. Scanning electron microscopy demonstrated an adhesive growth behavior of the consortium on the rubber surfaces. The results from Fourier transform infrared spectroscopy revealed the decrease in number of cis-1,4 double bonds, the formation of carbonyl groups indicating an oxidative attack at the double bonds.

Biography

Kamontam Umsakul associated with Department of Microbiology, Prince of Songkla University, Thailand. She has published several papers in reputed journals. Her research interest is Microbiology.

Kamontam.u@psu.ac.th