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Superlative short chain length and medium chain length polyhydroxyalkanoates microbial producers isolated from Malaysian environment

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Abstract
Plastic waste pollution is escalating globally at an unprecedented pace, with a significant measure of this waste remaining unrecycled. Hence, polyhydroxyalkanoates (PHAs), a biogenic polyester, as a potential alternative to synthetic plastics has been intensively studied over the years. PHAs are biodegradable and biocompatible polyester produced by various microorganisms through the bioprocessing of sustainable sources. Bacterial PHAs show potential as an eco-friendly, biodegradable, and biocompatible alternative to conventional plastics. Malaysian environment, anthropogenic and natural, harbors an enormous diversity of microorganisms as well as various bacteria that produce PHAs. Hence, the current submission highlights on four indigenous PHA producers, isolated from the local environments, namely Cupriavidus malaysiensis USMAA2-4, Cupriavidus malaysiensis USMAA10-20, Cupriavidus malaysiensis USMAHM13, and Pseudomonas putida BET001. The four strains have contributed significantly as a workhorse in advancing PHA research and innovation in Malaysia and globally. Their uniqueness and significance in the PHA investigation, which include biosynthesis, recovery strategies, metabolic pathways involved, characteristics and properties of extracted PHA, biodegradation, and its potential applications are discussed.

Author Keywords
Biodegradable; Cupriviadus Sp; Indigenous; Malaysia; Polyhydroxyalkanoates; Pseudomonassp

Index Keywords
phytohemagglutinin, plastic, polyester, polyhydroxyalkanoic acid;
biodegradation, biosynthesis, Cupriavidus, Malaysia, nonhuman, plastic waste, Pseudomonas putida, review, bioremediation, Cupriavidus, genetics, isolation and purification, Malaysia, metabolism, Pseudomonas putida; Biodegradation, Environmental, Cupriavidus, Malaysia, Plastics, Polyhydroxyalkanoates, Pseudomonas putida

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