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## Synthesis of polymeric Nanoparticles (NPs) for the encapsulation of Mono Myristin (MM)

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**Statement of the Problem:** Cancer refers to a group of over 100 distinct diseases which result in severe illnesses and eventually leads to death. Though treatment by chemotherapy in cancer patients appears to be effective against cancerous cells, it is hindered by limitations in drug absorption, accumulation and drug targeting. Therefore normal rapid-proliferating cells always get destroyed and lead to death. Drug delivery system is the clue to bring the anticancer drug to the target cancer cells. Polymeric nanoparticles (NPs) is a choice of vehicle in drug delivery system in order to enhance drug absorption, accumulation, thus preventing drug loss, as well as improving sustained release of drug in cancerous tissues. However, NPs' properties, such as, biodegradability, biocompatibility, solubility in aqueous or dispersion stability and drug release profile, are relied on materials used as components. The purpose of this study is to focus on encapsulation of monomyristin (MM) which was tested to have the antiproliferative activity against cervical cancer (HeLa) cells using poly(lactic acid) (PLA)-based nanoparticles (PLA NPs) with hydrophobically-modified dextran grafting for preparing drug-loaded polymeric NPs for drug delivery.

**Methodology & Theoretical Orientation:** In the present study, dextran was grafted with phenoxy group at different levels of phenoxy. The modified dextran was used to develop NPs with PLA using emulsion/solvent evaporation method with different sonication powers. The NPs components, stability, size and aggregation were checked.

**Findings:** The result showed that NPs grafted with DexP26 had the least aggregation. This thus implied that DexP26 may serve as a good stabilizer in the synthesis of NPs.

**Conclusion & Significance:** From this study, MM-encapsulated PLA NPs were newly prepared and they could serve as promising/stable carriers for MM delivery.

### Biography

Sirirat Boondireke has received her Bachelor's degree in Biotechnology (2007) and Master's degree in Microbiology (2010). Currently, she is a PhD candidate in Biomedical Science Program at Department of Microbiology, Faculty of Medicine, Srinakharinwirot University, Thailand. She has been receiving a Royal Golden Jubilee PhD Scholarship awarded by the Thailand Research Fund under the Office of the Prime Minister, the Royal Thai Government since 2012. She also received the PhD grant from the French Government to carry out a part of her PhD research at Laboratory of Macromolecular Chemical Physics (LCPM), Université de Lorraine, France in 2014 and 2015. Her interdisciplinary PhD project has focused on the development and synthesis of polymeric nanoparticles for the encapsulation of anticancer agents with a targeting ligand attached on their surface to induce specific recognition and accumulation at cancerous cells/tissues. She has interests in drug delivery system, targeting, nanomedicine for cancer therapy and biomedical research.

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