

**UNIVERSITI TEKNOLOGI MARA**

**FEASIBILITY INTERACTION OF  
ACETAMINOPHENOL AND  
SELECTED EXCIPIENTS  
PREPARED BY SOLID DISPERSION  
MIXING TECHNIQUES**

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Thesis submitted in fulfilment  
of the requirements for the degree of  
**Master of Science**

**Faculty of Applied Sciences**

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I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, University Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

The aim of this study is to investigate the potential of drug excipient interaction by acetaminophen as active pharmaceutical ingredient (API) and selected excipient(s) of Poloxamer 188, Poloxamer 407 and PVP prepared by solid dispersion techniques. A fast and simple solid dispersion techniques, which are fusion and solvent method were used to prepare the acetaminophen and selected excipient(s) in three different ratio as follows; 1:1, 1:3 and 3:1. The prepared solid dispersion was then undergoes physicochemical characterization by Attenuated Total Reflection (ATR-FTIR), Differential Scanning Calorimetric (DSC) and Powder X-ray Diffraction (PXRD). Analysis by ATR-FTIR showed that the acetaminophen and selected excipient(s) prepared by both fusion method show interaction resulting in hydrogen bonding interaction. The PXRD analysis, changes in acetaminophen crystalline structure was observed by the shifted and changes in peak intensity while DSC showed that no chemical interaction was involved by the acetaminophen and selected excipient(s) prepared by fusion and solvent method. The results showed that 1:1 ratio was the best ratio in giving the maximum interaction. As a conclusion, the physicochemical characterization acetaminophen and selected excipient(s) by ATR-FTIR, PXRD and DSC has resulted in physical interaction.

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