UNIVERSITI TEKNOLOGI MARA

SOLUBILITY ENHANCEMENT OF KETOCONAZOLE USING CO-SOLVENCY AND MICELLAR SOLUBILISATION FOR ORAL SOLUTION

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Dissertation submitted in partial fulfilment

of the requirements for the degree of

Bachelor of Pharmacy (Hons)

Faculty of Pharmacy

JUNE 2015

ACKNOWLEDGEMENT

Alhamdulillah, first of all, praise be to Allah S.W.T because of His gracefulness, I manage to complete this study within the time. I would like to express my deepest gratitude to my supervisor Professor Mohamed Salama for his support, ideas, time as well as for his encouragement during the study. Without his generosity and concern, I would not be able to finish this research. Special thanks to my lab mates Mumtaz Mohamad, Mohamad Solihin and Zul Hasmi who always work together with me to share their knowledge and support.

Special thanks also to all the staffs at Faculty of Pharmacy who offered their help in my study especially in the form of laboratory instruments and materials for completing the study. Also thanks to my family and friends for their understanding, encouragement and support during this study. Last but not least, I wish to convey my gratitude to Faculty of Pharmacy, UiTM Puncak Alam and any person or organization, direct or indirectly contributed in this study.

Thank you.

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ABSTRACT

Fungi is an organism which can breed and spread on the body surface and cause local infection to the skin, mouth, nails and vagina. Besides that, it will also cause systemic infection that may affect the internal organs especially towards person with impaired immune system. Nowadays, there are many antifungal agents that already available in market. Ketoconazole is one of the antifungal drugs that is effective in both systemic and topical action. However, the problem with ketoconazole is it has poor solubility in aqueous media. As our body system mainly consists of water, the bioavailability of this agent in the body is low. So, the objective of this research was to enhance the solubility of ketoconazole to be administered as oral solution. Two methods being used in this study were cosolvency and micellar solubilisation. The solubility of ketoconazole was determined by using UV spectrophotometer. The results obtained showed that polyvinylpyrrolidone K-30 produced the highest solubilisation of ketoconazole as compared with other solvents.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Fungi can breed and spread on the body surface and cause infection to the skin, mouth, nails and vagina. This infection can be recognized by some signs and symptoms that depend on the type of fungus infection and affected body parts. This infection will cause skin rashes with red, itchy and scaly feel (Marks, 2003). There is even significant morbidity and mortality in patients with impaired immune systems caused by the invasive fungal infections (Hawkins & Armstrong, 1984). Fungal infection is more susceptible to a person who does not practice cleanliness, wearing tight cloth, having poorly controlled diabetes and weak immune system. Warm, moist and airless of skin are the most favourite conditions for the fungi (Kenny, 2008).

There are many types of antifungal drugs that can be used to treat the infections caused by fungi. In this research, ketoconazole will be used as a model drug due to the effectiveness in both systemic and topical action plus its ability to be comprised into several pharmaceutical forms (Najmuddin, Khan, Aa, S.Shelar, & Patel, 2010). Ketoconazole is an antifungal drug with imidazole structure related to miconazole and keconazole which are the earlier compounds of this series. However, its spectrum of activity is slightly different compared with the two members as it can be administered orally for treating various types of superficial and deep fungal infections. (Heel et al., 1982). Ketoconazole is available in creams, lotions, shampoos, injections and oral forms. The easiest and simplest way of drug delivery is through oral administration