PALM KERNEL OIL BLENDS AS SUPPOSITORY BASES IN THE DELIVERY OF ASPIRIN

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ABSTRACT: Rectal delivery of drugs has been proven to be effective in terms of drug absorption and distribution comparable with other routes such as oral, buccal, sublingual or even nasal. In this study, two new suppository bases were developed using combinations of locally sourced hydrogenated palm kernel oil, hydrogenated palm kernel stearin and hydrogenated palm kernel olein with mixtures of stearic acid and glyceryl monostearate. When formulated with aspirin, these bases produced suppositories with acceptable characteristics. These aspirin suppositories were tested on twelve healthy subjects after an approval from the Medical Ethics Committee, University of Malaya had been procured. We quantified aspirin from the urine samples of the subjects to determine the relative availability of the different suppository preparations relative to an oral dose. The excretion of salicylic acid, one of the metabolite of aspirin in human urine taking aspirin was quantified. The F value was found to range from 1.16 to 1.36. Hence, the excretion results showed that these palm kernel oil blends are suitable suppository bases. (JUMMEC 2007: 10(2):43-50)

KEYWORDS: Rectal delivery, palm kernel oil, suppository, aspirin, urine.

Introduction

Suppositories use oil only in the form of hard butter. Suppository bases have evolved from the traditional cocoa butter (theobroma) to currently available commercial bases such as the Witepools(r) and Wecchels(r) which are made from the fatty component of coconut oil. These bases are replacing theobroma as it exhibits problems in the preparation and storage stages of the finished suppository product (1). As Malaysia is blessed with an abundant production of palm oil or palm kernel oil, new suppository bases can be formulated which can have characteristics similar or superior to the currently available commercial suppository bases mentioned earlier. For instance, the suppository bases made from palm oil and palm kernel oil can be made to be more robust and can be exposed to extreme temperatures without affecting the integrity of the finished product in terms of quality and effectiveness. This study was designed to determine the suitability of palm kernel oil blends as a base in the production of suppositories. In terms of drug release from the proposed suppository bases in human subjects, we only sampled urine from subjects taking aspirin in the form of suppositories made from the two selected blends of palm kernel oils and an oral capsule preparation. The interpretation of urine data is very straightforward as shown by Richardson (2) in his study on urine. Approval from the Medical Ethics Committee, University of Malaya on this study had been procured (Reference number: MEC 3084).

Material and Methods

Material used in preparation of suppository bases
Hydrogenated palm kernel oil (batch no: 004033801) and hydrogenated palm kernel stearin (batch no: 0091420002) were procured from Cargill (M) Sdn. Bhd., stearic acid (batch no: Tristi149) was donated by Hesego Industry (M) Sdn. Bhd. and glyceryl monostearate (batch no: E01096) was donated by Essechem (M) Sdn. Bhd.

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