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SAOWANEE CHAIPAKDEE : FORMULATION OF DIHYDROARTEMISININ SUPPOSITORY. THESIS ADVISOR : SOMPOL PRAKONGPAN Ph.D., SATIT PUTTIPIPATKHACHORN Ph.D. 126 p. ISBN 974-662-124-6

Dihydroartemisinin (DHA) is a potent antimalarial compound derived from reduction of artemisinin, an active constituent of Chinese medicine plant, Qinghao (*Artemisia annua L.*). In the present study, rectal suppository was developed as an alternative route of administration especially in children and in rural areas where parenteral administration is indicated but not feasible. Quantitative analysis of DHA by conversion to the UV-absorbing compound with sodium hydroxide and UV detection at 238 nm was developed. The solubility of DHA in water, 95 % ethanol, polyethylene glycol 400 (PEG 400), propylene glycol, glycerin, Sorensen's phosphate buffer pH 7.4, various aqueous-ethanolic solutions, propylene glycol-ethanolic solutions, PEG 400-ethanolic solutions, and hydroxypropyl-β-cyclodextrin solution at 30 °C were determined. Thermal analysis of DHA, suppository base and DHA suppository indicated that the presence of 60 mg DHA did not affect the DSC thermograms of the bases. DHA suppositories (60 mg/2 g) were prepared from either lipophilic (Suppocire A, AM, AP, D, DM) or hydrophilic bases (PEGs) by fusion method. The percent labeled amount of DHA in all formulations were found to be in range of 100± 10%. The variation in drug content in each part of each suppository which was divided into three parts was less than 2.12%. The *in vitro* release of DHA from various suppository formulations were performed by using the dialysis tubing method. The DHA release from PEGs was greatest due to the fast dissolution of PEGs. The sequence of DHA release from lipophilic bases was found to be inversely proportional to the melting temperature of the bases. Higher release from Suppocire AP base was observed which could be due to its non-ionic surfactant content. Stability of suppositories was studied by storage at 30 °C and 45 °C and analysed for the content of DHA by HPLC. It was found that the degradation of DHA in suppository storage at 45 °C was higher than storage at 30 °C and followed the first-order kinetic. The rate of degradation of DHA in PEGs was faster than that in Suppocire AP and Suppocire AM. From the stability study DHA formulated from Suppocire AM and Suppocire AP should be selected for further irritation and bioavailability studies.