Abstract

Various chocolate dosage forms are already marketed due to its pleasant taste and distinctive nature. However, despite the attractiveness and the current use of chocolate as a taste masker in many marketed preparations, limited research is currently available relating to the effect of chocolate on the bioavailability of drugs in vivo. Therefore, the main objective of this study was to investigate and study whether the ibuprofen in co-crystals or solid suspension in chocolate matrices will influence the pharmacokinetics of ibuprofen in rats and whether it will be different to the co-ingestion of ibuprofen with chocolate.

A simple, rapid and sensitive method using High Performance Liquid Chromatography-Ultra Violet (HPLC-UV) was used and validated in this study for determination of ibuprofen in rat serum using EMEA (2011) guidelines. The different formulations were orally gavaged into Sprague-dawely rats and blood samples at the different time intervals were collected, treated and analyzed using Instat software version 3.06.

Analysis of the in vivo data revealed a significant reduction (p<0.05) in the maximum serum concentration of ibuprofen from 65.54± 6.673mcg/ml when ibuprofen was administered alone to 43.36± 9.589mcg/ml and 45.81± 7.62mcg/ml when ibuprofen was incorporated into the co-crystals or solid suspension chocolate matrices, respectively. On the other hand, no significant differences were found in the area under concentration-time curves to 8 hours and to infinity time between the different formulations. Findings from this study gave an indication on possible sustained effect of ibuprofen when incorporated into the different chocolate matrices and the great potential those novel formulations could possess.

Bioavailability Evaluation of Novel Chocolate Based Ibuprofen Formulations in Rats

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