

**UNIVERSITI TEKNOLOGI MARA**

**SAFETY ASSESSMENT AND  
BIOAVAILABILITY STUDY OF  
*BRUCEA JAVANICA* SEEDS  
AQUEOUS EXTRACT**

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## ABSTRACT

Diabetes mellitus is a disease that is increasing worldwide. The aqueous decoction of *Brucea javanica* (Simaroubaceae) seeds are traditionally used as anti-diabetic medicine. Standardization of an extract ensures the therapeutic effect is reproducible. The aim of the research is to evaluate the safety of daily consumption of a standardized aqueous extract and to develop of a sensitive Liquid Chromatography-tandem Mass Spectrometry (LC-MS/MS) system to establish the bioavailability and pharmacokinetics study of bruceine D and E. A High Performance Liquid Chromatography-Photodiode Array (HPLC-PDA) method was developed and validated for the determination of both bruceines in the aqueous extract. Both the normoglycemic and STZ-induced diabetic rats were administered with standardized aqueous extract. Blood was withdrawn and evaluated on its blood glucose extent for 8 hours. The standardized aqueous extract was administered orally to rats to establish the acute toxicity and repeated oral toxicity. Finally, rats were administered with standardized aqueous extract to establish both bioavailability and pharmacokinetic studies. Oral administration of standardized aqueous extract of 15, 30 and 60 mg/Kg body weight of rats exhibited a dose-response relationship in both of the normoglycemic and STZ-diabetic rats. Daily oral administration of 15, 30 and 60 mg/Kg of standardized aqueous extract for 30 days in rats did not show any sign of toxicity in its biochemical, haematology and histology analysis. The LC-MS/MS method was successfully applied in the pharmacokinetics and bioavailability study. The oral bioavailability of bruceine D and E were given by 5.0 and 5.9%, respectively.

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