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## Quantification of curcumin in human plasma by ultra performance liquid chromatography-mass spectrometry (UPLC-MS/MS) and its application to *in vivo* study

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Curcumin is a polyphenol, found in the spice turmeric from the rhizome of *Curcuma Longa*. After oral administration, curcumin undergoes rapid metabolism by conjugation and reduction. Curcumin levels are generally low so that the required bioanalytical method is selective and sensitive. A simple, specific and rapid UPLC-MS/MS method has been developed and validated for the estimation of curcumin in human plasma, using diazepam as internal standard (IS). The separation was done using UPLC BEH C18 column (1.7  $\mu$ m, 2.1 $\times$ 100 mm) Acquity<sup>®</sup> Waters; 0.15% formic acid - acetonitrile (50:50, v/v) as mobile phase; flow rate of 0.5 mL/min; using liquid-liquid extraction with the mixture of ethyl acetate-methanol (95:5) for the sample preparation. The ionization mode was performed using electrospray ionization (ESI) detection in multiple reaction monitoring (MRM) in positive ionization mode. The monitored MS/MS ion transitions were m/z 369.05>176.95 and 284.95>193 for curcumin and diazepam respectively. The method fulfilled the requirement of EMEA Bioanalytical Method Validation Guidelines 2011 and the calibration curve was linear in concentration range of 1-100 ng/mL, thus LLOQ for curcumin was 1 ng/mL. The method was applied to determine the level of curcumin in healthy subject after 1800 mg oral administration of curcumin dosage form. There was no free curcumin determined in plasma sample, but curcumin glucuronides and sulfates were detected in plasma subject. The ratio of glucuronide to sulfate was 4:1.

### Biography

Yahdiana Harahap has completed her PhD from Department of Pharmacy, Institute Technology Bandung, Indonesia. Currently she is the Head of Bioavailability and Bioequivalence Laboratory, Faculty of Pharmacy, Universitas Indonesia. Prior to this position, she was the Dean of Faculty of Pharmacy, Universitas Indonesia. She has published 40 papers in both international and national journals. She has been invited to be the speaker in many international conferences, especially in the field of BA/BE and Bioanalysis technique. She currently serves as an Expert at Indonesia National Agency of Drug and Food Control, specifically in BA/BE evaluation.

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