INTRODUCTION
Curcumin has demonstrated promising anticancer activities in clinical studies when used alone or combined with other drugs. In addition, curcumin can prevent chemotherapy-induced adverse effects in combinatorial regimens. After oral administration in humans, curcumin is rapidly metabolized to form curcumin sulfate and other metabolites.

In the present study, we describe a fully validated LC-MS/MS method for the quantitation of curcumin sulfate in treated human blood to support a formulation cocktail study. Curcumin sulfate was separated from curcumin and other metabolites in chromatography and fragmented in interface to curcumin ion that was monitored as the parent ion. The designed method can avoid contamination by sulfate salt and significantly improve the method robustness.

METHOD
At LC-MS interface, by applying higher declustering potential, curcumin sulfate ion (m/z 449.1) turned into curcumin ion (m/z 369.1) via loss of the sulfate group and was further fragmented in collision cell to form m/z 177.1 ion.

RESULTS
Curcumin sulfate was separated from curcumin on a Betasil C8 (100x2.1mm 5µ) column using a gradient with mobile phases of 10 mM ammonia acetate and acetonitrile to avoid its interference.

CONCLUSION
Validation results obtained in this study indicate that this is a robust and reliable method to determine curcumin sulfate and can be used to support curcumin or curcumin cocktail preclinical applications and clinic trial studies.