

UHPLC

UHPLC (ultra high performance liquid [chromatography](#)) operates in the 20,000 psi range.

[Temozolomide](#) (TEMODAL™) (TMZ) is an [antineoplastic](#) agent that is primarily used for the treatment of [glioblastoma](#) and [anaplastic gliomas](#), two aggressive forms of brain [cancer](#). Due to the poor prognosis of [brain tumor](#) patients, there is an increasing body of research into improving the stability and delivery of TMZ past the [blood brain barrier](#) using carrier molecules. These require accurate determination of TMZ levels for biodistribution and pharmacokinetic evaluation. Unfortunately, current methodologies for the determination of TMZ in human plasma suffer from low reproducibility, recovery, sensitivity or cost ineffective procedures associated with extensive sample cleaning. To surpass these disadvantages, El Mubarak et al. from Patras, [Ioannina](#), Greece, London, Surrey, UK, developed two bioanalytical methods with high [sensitivity](#) and excellent recovery for the determination of TMZ in human plasma at minimum cost. [Liquid chromatography](#) coupled with tandem [mass spectrometry](#) (LC-MS/MS) was used and both methods were validated under US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) guidelines. The two methods had minor differences in the sample pre-treatment and each method was developed and applied in separate laboratories. Theophylline was selected as internal standard (IS). Calibration curves were linear over the range of 10-500 ng/mL with extraction recovery ranging from 77.3 to 97.3% while all validation parameters met the acceptance criteria and proved the methods' reliability. The validated methods were successfully applied to plasma samples donated from cancer patient following treatment with temozolomide ¹⁾.

¹⁾

El Mubarak MA, Stylos EK, Chatziathanasiadou MV, Danika C, Alexiou GA, Tsekeris P, Renziehausen A, Crook T, Syed N, Sivolapenko GB, Tzakos AG. Development and validation of simple step protein precipitation UHPLC-MS/MS methods for quantitation of temozolomide in cancer patient plasma samples. J Pharm Biomed Anal. 2018 Sep 8;162:164-170. doi: 10.1016/j.jpba.2018.09.019. [Epub ahead of print] PubMed PMID: 30243056.

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Last update: **2024/06/07 02:59**

