

Publication**Accuracy of Calculated Free Valproate Levels in Adult Patients With Status Epilepticus****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4605177**Author(s)** Fisch, Urs; Baumann, Sira M.; Semmlack, Saskia; Marsch, Stephan; Rüegg, Stephan; Sutter, Raoul**Author(s) at UniBasel** [Sutter, Raoul Christian](#) ; [Rüegg, Stephan](#) ;**Year** 2021**Title** Accuracy of Calculated Free Valproate Levels in Adult Patients With Status Epilepticus**Journal** Neurology**Volume** 96**Number** 1**Pages / Article-Number** e102-e110**Mesh terms** Aged; Anticonvulsants, therapeutic use; Blood Chemical Analysis, standards; Female; Humans; Male; Middle Aged; Serum Albumin, analysis; Status Epilepticus, drug therapy; Valproic Acid, therapeutic use

To test the accuracy of an equation in adult patients with status epilepticus (SE) that calculates the free concentration of serum valproic acid (fVPA) from the total concentration of serum VPA (tVPA) and serum albumin.; All adult SE patients that were treated at a Swiss academic medical center between 2005 and 2018 with concurrent measurements of tVPA, fVPA and serum albumin were included. fVPA was categorized as subtherapeutic, therapeutic (5-10 mg/L), or supratherapeutic. Agreement was defined as the proportion of measured and calculated fVPA falling within the same category.; Of 676 SE patients, 104 had 506 measurements with a median of 3 (interquartile-range [IQR] 1.5-6.5) per patient). The median tVPA was 43.5 mg/L (27.4-63.6), with measured fVPA 9.1 mg/L (4.5-14.7) and calculated fVPA 10.1 mg/L (7.0-13.0), respectively. The median deviation of calculated from measured fVPA was -0.8 mg/L (-3.2 to 2.5) with 336 measurements >1 mg/L. While the association between measured and calculated fVPA was linear (regr. coeff. = 1.1, 95% CI 0.9-1.2.; p; < 0.0001), the agreement on effective drug levels did not match in 39.8% of measurements regardless of serum albumin levels, with calculated fVPA overestimating measured fVPA in 30.4%. tVPA and serum albumin independently influenced the accuracy of the calculated fVPA in the multivariable model.; Calculated fVPA is inaccurate when using the proposed equation in adult patients with SE, calling for drug monitoring based on measured fVPA in this context.

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