

P156. MEASUREMENT UNCERTAINTY IN LITHIUM CONCENTRATIONS

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Lithium is a mood-stabilizing agent used in the treatment of bipolar disorders. Uncertainty is a parameter associated with the results of a measurement, that characterizes the distribution of the values that could reasonably be caused from the measurand. The objective of this study is to calculate measurement uncertainty of lithium by using internal quality control data and inter-laboratory results to compare these calculated measurement uncertainties with total allowable error % (TEa %) value of CLIA'88 and RILIBAK.

Internal quality control data were collected between March 2015 and February 2016. For the estimation of bias inter-laboratory comparison was carried out. Measurement uncertainty of lithium was calculated in accordance with ISO21748 guideline. Lithium levels were determined in Roche Cobas Integra 800 analyzer by colorimetric method.

Internal quality control coefficient of variations (CV) were calculated 2.67 and 2.37 in low and high level internal quality control serums respectively. Total allowable error value of lithium was 10.05% and not higher than desirable TEa% values of CLIA'88 and RILIBAK.

Lithium exhibits a narrow therapeutic window and its toxic concentrations (>1.5 mmol/L) are very near the upper threshold for effective therapy (up to 1.2 mmol/L). For this reason, uncertainty values play an important role in differentiation of patient's state and medical care. Uncertainty of measurement system TEa% values are important for patient results and they should not exceed desirable values.

Clinicians should be informed about uncertainty of drug to give proper medical care.

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