

Determine limits of detection LOD and limits of quantification LOQ - How To

The limits of detection (LOD) and quantification (LOQ) are evaluated using the following equations [1-4]:

$$\text{LOD} = 3.3 S_0/b$$

$$\text{LOQ} = 10 S_0/b$$

where S_0 is the standard deviation of the calibration line's y-intercept

where b is the slope of the linear regression line of best fit.

The limit should be subsequently validated by the analysis of a suitable number of samples known to be near or prepared at the quantitation limit.

References:

- [1] Ermer, J.; *Validation in pharmaceutical analysis. Part I: an integrated approach*; Journal of Pharmaceutical and Biomedical Analysis, (2001); 24: 755-767.
- [2] Perez-Bendito, D., Silva, M.; *Kinetic Meth. in Analytical Chemistry*; Chichester, Ellis Horwood, (1988), pp. 254.
- [3] Mottola, H.A.; *Kinetic Aspects of Analytical Chemistry*; New York, Wiley, (1988), pp. 40.
- [4] Thomsen, V., Schatzlein, D., Mercurio, D.; *Limits of detection in spectroscopy*; Spectroscopy, (2003); 18(12): 112-114.
- [5] Dolan, J.W.; *What's the Problem with the LLOQ? — A Case Study*, LC-GC North America, 31 (11), pp. 926-931.