

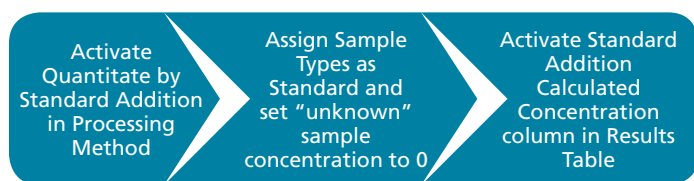
Standard Addition Processing Simplified with SCIEX OS 1.4

Streamline data processing for samples that require quantitation with standard addition technique

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What: Standard addition is an analytical technique that allows the user to quantitate analytes in complex samples with high background or when surrogate standards are not readily available. The sample with an endogenous concentration of the target analyte is spiked with increasing amounts of known standard of that analyte and the subsequent standard addition curve and the response factor are used to extrapolate an unknown concentration in the original sample. MultiQuant™ Software is currently unable to perform this technique natively inside the software. It must be accomplished using a query architecture, which can be time-consuming and prone to human error.



How: In this example of pond water screening, endogenous levels of ciprofloxacin were observed. By activating the standard addition feature in the processing method, the endogenous level was easily calculated, and the calibration curve plotted.

- Sample Type was set to Standard for all samples, even the unknowns.
- The known concentrations for the unknowns were set to 0, and the true standards assigned their actual concentration.
- The column "Standard Addition Calculated Concentration" was activated in the Results Table to show the calculated concentration of the endogenous level of ciprofloxacin in the unknown samples.
- The "Standard Addition Calculated Accuracy" column values are calculated by the software.
- The Sample ID column is used to group different sets of standard additions for each sample, as necessary.
- Results are dynamically updated when any changes are made to the Results Table.

One of the critical requirements of standard addition is ensuring the correct amount of spike is added to allow extrapolation back to the endogenous value. The standard addition feature addresses this issue and is very easy to use. It does this by providing a calibration curve (Figure 1), with a dotted line indicating the endogenous level in the unknown sample.

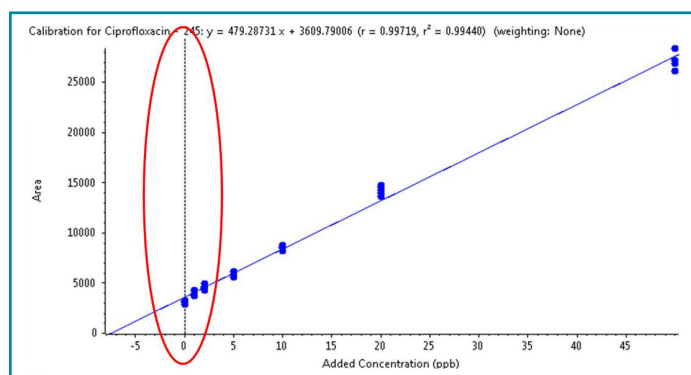


Figure 1. Standard addition calibration curve

The Standard Addition Accuracy column (shown below) can be used to estimate if the added amount is roughly identical with the endogenous level in the sample.

Sample Name	Sample ID	Sample Type	Actual Conc...	Std Addition Calculated Conc...	Std Addition Actual Conc...	Std Addition Accuracy
1 ppb_Pond	s1	Standard	1.00	7.096	1.00	705.61
2 ppb_Pond	s1	Standard	2.00	7.096	2.00	354.81
5 ppb_Pond	s1	Standard	5.00	7.096	5.00	141.92
10 ppb_Pond	s1	Standard	10.00	7.096	10.00	70.96
20 ppb_Pond	s1	Standard	20.00	7.096	20.00	35.48
50 ppb_Pond	s1	Standard	50.00	7.096	50.00	14.19
Pond Blank	s1	Standard	0.00	7.096	0.00	N/A
1 ppb_Pond	s2	Standard	1.00	7.423	1.00	742.32
2 ppb_Pond	s2	Standard	2.00	7.423	2.00	371.16
5 ppb_Pond	s2	Standard	5.00	7.423	5.00	148.46
10 ppb_Pond	s2	Standard	10.00	7.423	10.00	74.23
20 ppb_Pond	s2	Standard	20.00	7.423	20.00	37.12
50 ppb_Pond	s2	Standard	50.00	7.423	50.00	14.85
Pond Blank	s2	Standard	0.00	7.423	0.00	N/A

Figure 2. Results Table showing Standard Addition Accuracy column

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