

Resource Summary Report

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Quantification of plant hormones by standard addition method

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Protocol Information

URL: <https://dx.doi.org/10.17504/protocols.io.bqy6mxze>

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Summary: Phytohormones are essential signaling molecules in multiple plant processes, including growth, development, and stress response. Simultaneous quantification of multiple plant hormones is required for understanding plant physiology because hormones typically change in tandem in response to external stimuli. Sensitive and quantitative analysis using liquid chromatography-linked mass spectrometry (LC-MS/MS) adopts stable isotope-labeled compounds in previously published works. However, a method for quantifying phytohormones when isotopically labeled chemicals are not available, remains to be established. This protocol can be used for measuring plant hormone content by standard addition method. Standard addition method has been used for quantification of various compounds such as drugs and pesticides especially when it is difficult to obtain stable isotope-labeled compounds. Plant hormones are extracted from a plant material such as *Lotus japonicus* with 50% acetonitrile and partially purified with reversed-phase solid-phase extraction (SPE) and ready for LC-MS/MS analysis. Calibration curves are constructed by spiking pure standards to the matrix. The method allows us to quantify plant hormones in plant tissues of interest by correcting matrix effects.

Associated Publications: Hashiguchi T, Hashiguchi M, Tanaka H, Fukushima K, Gondo T, Akashi R (2021) Quantitative analysis of seven plant hormones in *Lotus japonicus* using standard addition method. PLoS ONE 16(2): e0247276. doi: [10.1371/journal.pone.0247276](https://doi.org/10.1371/journal.pone.0247276)

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