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www.elsevier.com/locate/talanta

PII: S0039-9140(17)30958-X
DOI: http://dx.doi.org/10.1016/j.talanta.2017.09.014
Reference: TAL17917

To appear in: *Talanta*

Received date: 8 June 2017
Revised date: 5 September 2017
Accepted date: 6 September 2017

Cite this article as: Florencia Jesús, Ricardo Hladki, Natalia Gérez, Natalia Besil, Silvina Niell, Grisel Fernández, Horacio Heinzen and María Verónica Cesio, Miniaturized QuEChERS based methodology for multiresidue determination of pesticides in odonate nymphs as ecosystem biomonitors, *Talanta,* http://dx.doi.org/10.1016/j.talanta.2017.09.014

Miniaturized QuEChERS based methodology for multiresidue determination of pesticides in odonate nymphs as ecosystem biomonitors

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ABSTRACT

The impacts of the modern, agrochemicals based agriculture that threatens the overall systems sustainability, need to be monitored and evaluated. Seeking for agroecosystems monitors, the present article focus in the occurrence and abundance of aquatic macroinvertebrates, that have been frequently used as bioindicators of water quality due to their relationship with land use. Some of these organisms are on the top of the food chain, where bioaccumulation and biomagnification processes can be observed, and they can turn into secondary pollution sources of systems and terrestrial organisms as well.. Odonate nymphs, which belong to the functional group of predators, were selected for this study. A methodology to determine 73 pesticide residues in odonate nymphs by LC-MS/MS and GC-MS/MS was developed. A QuEChERS sample preparation strategy was adapted. As it is complex to obtain samples especially in disturbed ecosystems, the method was minimized to a sample size of 200 mg of fresh