OH2 Development of Electrospray Ionization Tandem Mass Spectrometry Method for the Identification of Organic Phosphorus Compounds in Aquatic Sediments

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Selective detection of organic Phosphorus compound using parent ion scan tandem mass spectrometry combined with liquid chromatography

Phosphorus (P) is a key element for primary production in lakes and most lakes are dependent on recycling of P from sediment (internal loading) to maintain their trophic status. The turnover of organic P species, although closely related to lake productivity, is still not much investigated. This may be due to the limitations of the currently used analytical techniques for extraction and identification of organic P forms in aquatic sediment. Tandem mass spectrometry utilizing parent ion scan mode in combination with liquid chromatography provides enhanced selectivity making it possible to analyze P compounds extracted by 0.1 M NaOH. Furthermore, the use of information dependent experiments facilitates the elucidation of compound structure. By analyzing extracts from different layers in sediment profile information about turnover of organic P can be obtained. With this information it is possible to identify P forms that will contribute to future primary production as well as forms that will be permanently buried in the sediment.