Analysis of InsP1 and InsP2 in biosamples by CE-MS

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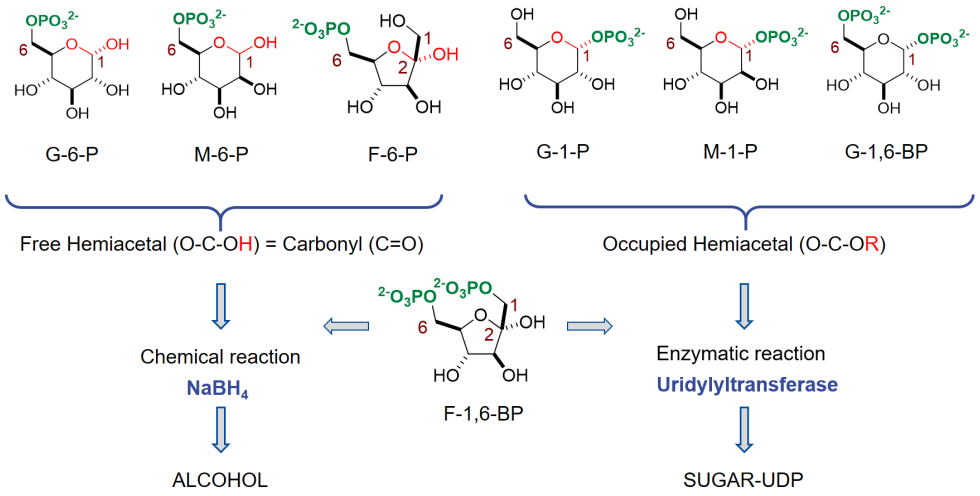
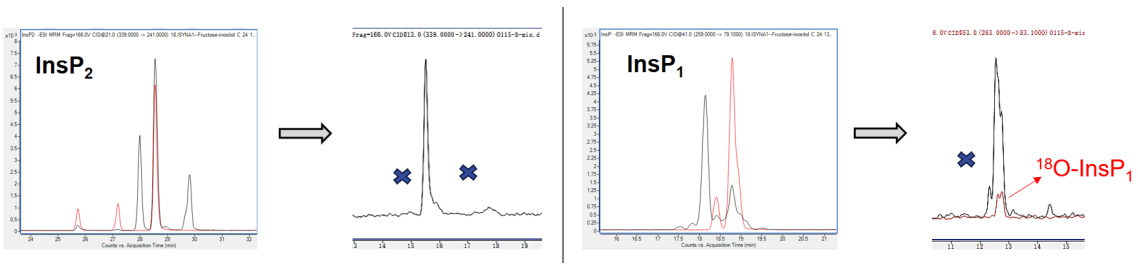
Inositol phosphates play an essential role in the biology world and they are a type of molecule with numerous isomers, chromophore-free and a high charge density structures. Capillary electrophoresis mass spectrometry (CE-MS) has been shown to be a powerful analysis approach for InsP3-InsP8.[1-3] However, for InsP1 and InsP2, it is common to find mixtures of inositol phosphates and sugar phosphates in biosamples, which share the same mass and become problematic for the assignment by CE-MS.

Here we introduce the pre-treatment method to remove sugar phosphates and enable the accuracy of the measurement of InsP1 and InsP2, using uridylyltransferase and sodium borohydride (NaBH4). Uridylyltransferase converts occupied hemiacetal sugar phosphates to UDP-bonded products (sugar-UDP), e.g., glucose-1-phosphate to glucose-1-UDP. NaBH4 reacts with free hemiacetal sugar phosphates and generated corresponding alcohols, e.g., glucose-6-phosphate to sorbitol. The comparison between the biosample before and after the treatment showed that sugar phosphates were removed in the fragmentation and only inositol phosphates were reserved, ready for further analysis.





[1] D Qiu, H J.Jessen, et al. *Chem. Sci.* **2023**, *14*, 658.
[2] G Liu, H J.Jessen, et al. *RSC. Chem. Biol.,* **2023**, *4*, 300.
[3] D Qiu, H J.Jessen, et al. *Nat. Comm.* **2020**, *11*, 6035.