Online post-column solvent assisted and direct solvent-assisted electrospray ionization for chiral analysis utilizing LC-MS/MS

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Introduction

The low or non-polar solvents of the mobile phase in normal phase chiral separations hinder the ionization of the analyte molecules at the ESI-interface. Incorporation of assistant polar solvents in the mobile phase would enhance the ionization of the analyte molecules at the ESI-interface hence the signal intensity. The solvent assisted electrospray ionization (SAESI) approach is based on the introduction of assistant polar solvent directly into the ESI-interface under atmospheric pressure with the aid of the nebulizing gas. Online post-column solvent assisted ionization (OPSAI) approach is based on introduction of the assistant solvent by using a T-coupling that aid mixing of the sample solution with the assistant solvent.

Methods

SAESI approach:
Based on direct insertion of the make-up solvent into the ESI chamber

OPSAI approach:
Based on post-column solvent mixing in a T-coupling

Results & Discussion

Signal enhancement was more prominent in case of OPSAI rather than SAESI due to more contact time between the mobile phase and make-up solvents was provided.

Conclusion

OPSAI and SAESI are two approaches that can be used to enhance sample ionization from non-polar solvent in normal phase chiral separations using HPLC-MS. Both approaches can enhance the peak signal intensity and can be easily integrated with the HPLC-MS system.

References:

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