A more simplified 1D-LC/MS/MS setup based on a 5800+ system using SelectiQ®+ DFS technology is proposed and better usability and higher efficiency (30+%) are observed in comparison of current 2D-LCMS/MS for the quantitation of limaprost in human plasma.

**INTRODUCTION**

Limaprost, an analogue of prostaglandin E1 analogue, is a promising drug that has strong vasodilatory and antiplatelet activity for the treatment of various ischemic syndromes, such as ulcers, pain, and cold sensations associated with thrombosis (27). Limaprost is a high-performance liquid chromatographic (27) and subjective symptoms associated with acquired number oral arterial occlusive diseases.

**MATERIALS AND METHODS**

Sample Preparation: Human plasma samples prepared according to previously reported method(1)

- LC System: Shimadzu Prominence LC
- Column: Kinetex C18, 2.1 mm × 100 mm, 1.7 μm (Phenomenex Inc.)
- Mobile Phase A: 10 mM ammonium acetate (aq) + 1% acetonitrile (v/v)
- Mobile Phase B: acetonitrile
- Flow Rate: 0.3 mL/min, Gradient program
- Injection Volume: 5 μL
- Run Time: 15 min

**PRELIMINARY RESULTS**

The detailed LOD for pharmacokinetic research of limaprost in human plasma is 0.3-0.5 pg/mL. Even after the three-step SPE extraction and thorough chromatographic optimization, a very good endogenous co-existing interfering substances and high background noise (15±6 pg/mL) are found, resulting in pretty low sensitivity on 1D-LCMS/MS system. In consideration of complexity and long run time (over 30 min) for each sample on 2D-LC, SelectiQ®+ DFS technology combined with LC can provide an orthogonal separation to make the quantitation of limaprost in complex matrixes more simplified (Fig. 1 and Fig. 2).

Figure 1. a. Differential ion mobility selectivity (SIMS) device interface with a mass spectrometer - SIMS device is attached in front of the curtain plate and separation ions prior to entering the mass-spectrometer.

**ABSTRACT**

Determination of Limaprost, an analogue of PGE1 in human plasma by QTRAP® 6500+ and SelexiON®+ technology.

**RESULTS**

With the pretty high LOD sensitivity of the 5800+ system, an LLOQ (0.5±0.3 pg/mL for neat standard solution) is achieved using our orthogonal method, which meets the requirement of pharmacodynamics research of limaprost in human plasma (Fig. 4 and Fig. 5). The overall analysis time for each sample has been shortened to 15 min, leading to 3 times efficiency increased from 2D-LCMS/MS method (15 min vs. 50 min).

**CONCLUSIONS**

-LCMS/MS technology has the ability to prevent isocratic and interferences from contributing to quantitation of Limaprost in human plasma, resulting in unambiguously selectivity, a general reduction in LOD.

- A simplified 1D-LCMS/MS assay based on a SCIEX QTRAP® 5500+ LC-MS/MS system equipped with a SelectiQ®+ DFS device provides better usability and higher efficiency in comparison of current 2D-LCMS/MS for the quantitation of limaprost in human plasma.

**REFERENCES**


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