

2020 AOCS Annual Meeting & Expo 発表

題名 ; Simultaneous analysis of various triacylglycerol isomers by supercritical fluid chromatography

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Triacylglycerol (TAG) isomers have been reported to function differently in terms of physical and nutritional properties. Therefore, the analysis of TAG isomers in edible oils and biological samples is essential to control the physical properties and obtain detailed knowledge concerning their digestion and absorption. However, analytical methods for evaluating TAG isomers are still under development. At the 2019 AOCS Annual Meeting & Expo, we reported the practical analysis of TAG regioisomers and enantiomers comprising two oleic acids and one palmitic acid. In this study, we aimed the analytical method that reported previously was applied to various TAG isomers to verify its versatility.

In this study, we utilized supercritical fluid chromatograph-tandem quadrupole mass spectrometer (SFC-MS/MS) equipped with a chiral column and acetonitrile and methanol were used as modifiers.

The results confirmed the separation of TAGs comprising two palmitic acids and one oleic acid as well as those comprising two stearic acids and one oleic acid (sn-POP, sn-PPO, sn-OPP, sn-SOS, sn-SSO, and sn-OSS). Furthermore, standards of TAG enantiomers comprising three fatty acids, i.e., palmitic, stearic, and oleic acid (sn-SPO, sn-OPS, sn-PSO and sn-OSP) were successfully separated. Moreover, we were able to simultaneously quantify various TAG isomers in edible oils.

In conclusion, we applied analytical methods that previously reported to various TAG regioisomers and enantiomers and simultaneously quantify these isomers in edible oils.

Employing this approach will make it possible to grasp the detailed TAG composition, which will lead to improve controlling the physical properties and development of functional structured oils and fats.