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題名；Trans Fatty Acid with Conjugated Trienes Induce Flavor Reversion and Oxidation of Commercial Soybean Oil.

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Conjugated linoleic acid (CLA) is a general term for the geometrical and positional isomers of octadecadienoic (18:2) acid with a conjugated double bond system. CLA is a naturally occurring substance in food sources, such as milk fat and meat of ruminant animals. It also occurs in vegetable oils, but its content is negligible. On the other hand, we have reported that CLA and conjugated linolenic acids (CLN) are more rapidly oxidized than those of corresponding non-conjugated fatty acids, suggesting the involvement of CLA and CLN in oxidative deterioration of lipids. So, in this study, we analyzed occurrence of conjugated fatty acids in soybean oil by high performance liquid chromatography (HPLC). We have found the formation of CLN with conjugated trienes in commercial soybean oils. Main CLN in the oil were identified as t9,t11,t13-18:3 and t8,t10,cis (c)12- or c8,t10,t12-18:3 by gas chromatography-mass spectrometry. Total contents of CLN in soybean oils varied from 600-1400 mg/kg oil. We confirmed that CLN were produced in bleaching step in soybean oil production but not in other purification steps. The content of CLN could decreased by the modification of bleaching step to be less than 200 mg/kg oil. Furthermore, we have found formation of CLA and CLN with conjugated dienes in deodorization step. Comparative study of soybean oil containing different amounts of CLN showed that level of flavor reversion decreased with decreasing the CLN content. These results suggest importance of a small amount of CLN as a promotion factor for oxidative degradation of commercial soybean oil at an early stage of oxidation, especially for flavor reversion.