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Light-induced lipid oxidation can be either photooxidation or photosensitized oxidation depending on the absence or presence of photosensitizers in samples, respectively. Several authors reported that light exposure accelerates lipid oxidation in foods and model systems, which may be due to the presence of photosensitizers such as chlorophylls and riboflavin. Photosensitized-oxidation can generate singlet oxygen, which plays important role in the formation of off-flavors such as beany or grassy volatiles in unsaturated fatty acids, sunlight flavor from milk, and decomposition of vitamins and phytochemicals. Singlet oxygen can readily react with electron rich moiety in food compounds including fatty acids, amino acids, and vitamins due to the low activation energy. Many foods naturally have photosensitizers such as chlorophylls from green vegetables or riboflavin from dairy foods and displayed on the shelves under the light exposure, which generates singlet oxygen during storage. In this seminar, effects of photosensitized oxidation on the quality of real foods or model systems including free fatty acids, vegetable oils, or isoflavones will be discussed. Specifically, volatiles from riboflavin-photosensitized oleic acid model system or milk, volatiles from chlorophyll-photosensitized free fatty acids, and isoflavone degradation under riboflavin-photosensitized systems will be presented.