

## **Development and Evaluation of Protective Agent for UV Irradiation**

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Lipid-derived radicals and peroxides are involved in the pathogenesis of oxidative stress diseases, although lipid peroxide production is a required reaction between a lipid radical and molecular oxygen, a useful lipid radical detection method has remained tentative. In this study, the focus was on nitroxide reactivity, which allows spin trapping with carbon-centered radicals via radical-radical reactions and fluorophore quenching through interactions with nitroxide's unpaired electron. Thus, the aim here was to demonstrate a useful detection method for lipid-derived radicals as well as to clarify the effects of ketoprofen induced skin damage using nitroxide. This compound reacted with lipid-derived radicals, resulting in fluorescence due to alkoxyamine formation, and lipid peroxide concentrations decreased in the reaction system. Furthermore, nitroxide inhibited lipid peroxide production and skin damage in mouse induced by ketoprofen addition and UV irradiation. These results suggested that the novel application of profluorescent nitroxide could directly and sensitively detect lipid-derived radicals and inhibited the skin damage.