Synopsis of Original Research Paper

Imaging analysis of transdermal absorption of liposome-entrapped drugs and application to radical scavenging in skins

Hideo Utsumi

Farnlty of Pharmaceutical Sciences, Kyushu University

Transdermal absorption of drugs entrapped in liposomes and radical scavenging effects of antioxidants in skin were investigated with ESR spectroscopy. Spectral-spatial and spatial-spatial 2-D imaging system were developed for this purpose.

Spin-labeled compound entrapped in liposomes was applied on stripped hair-less mouse skin and release of the compound from liposomes was imaged by using spectral-spatial 2-D analysis system. Liposomes injected infra venously to mouse was measured non-invasively with a L-band ESR, but it was impossible to measure liposomes applied on skin of live mouse because of less sensitivity.

Anthralin radical was produced on hair-less mouse skin by treatment of anthralin and UV-irradiation. High resolution spectral-spatial imaging showed that anthralin radical was generated near skin surface. Intravenous administration of antioxidants prevented the generation of the radical. Ascorbic acid and glutathione decreased the generation of anthralin radical independent of inadiation period, but Trolox showed less effect during first 5h irradiation. Action mechanism of these antioxidants seems to be different.