

## Oxygen Radical Formation During Oxidation of Dithranol and its effect on Keratinocyte

**Shiro Kanegasaki**

*The Institute of Medical Science, The University of Tokyo*

Radical species probably formed during autooxidation of dithranol, 1,8-dihydroxy-9-anthrone, are considered to be responsible for antipsoriatic effect of this drug. By using spin-trapping ESR spectroscopy, we investigated whether or not radical species, such as oxygen radical and organic radical, were generated in the presence of dithranol in organic solvent, in aqueous solution or after incorporation of the drug into keratinocytes. In DMSO,  $O_2^-$  was found to be formed from molecular oxygen with the aid of dithranol. The reaction was greatly enhanced by near-UV irradiation. In DMSO-PBS mixture,  $O_2^-$  was also formed but it rapidly converted to  $\cdot OH$ . After incubation of the drug with keratinocytes, organic radical was formed from dithranol. Microsome and mitochondria were found to be responsible for the formation. Although dithranol exhibited cytotoxicity, no indicative of lipid peroxidation was found. Since oxygen radical scavengers prevent cytotoxic effect of dithranol, at least a part of the cytotoxic effect is due to oxygen radical species.