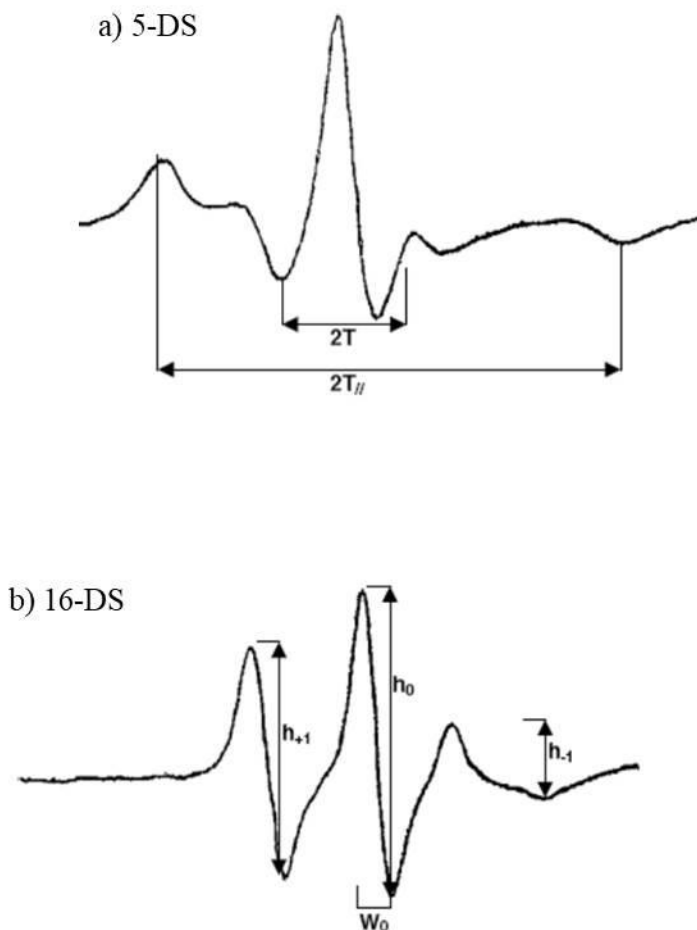


Supplement 1

A curve representing time and ESR signal height of doxyl stearic acid in LDL. The lag time is calculated at the end of the initiation phase, and the rate of ESR signal decay and time of 50% signal decay are calculated during the propagation phase of lipid peroxidation.



Supplement 2 Calculation of order parameter (S) and rotational correlation time (τ)

The order parameter is calculated by the following equation:

$$S = 1.732 \times (T_{//} - T_{\perp} - C) / (T_{//} + 2T_{\perp} + 2C); C = 1.4 - 0.053 (T_{//} - T_{\perp})$$

where $T_{//}$ and T_{\perp} are the hyperfine splitting constants for the magnetic field parallel and perpendicular to the lipid layer, respectively (Figure a).

The rotational correlation time is calculated by the following equations:

$$\tau = 6.51 \times 10^{-10} W_0 [(h_0/h_{-1})^{1/2} - 1]$$

where h_0 is the mid-field line height; h_{-1} is the high-field line height; and W_0 is the mid-field line width (Figure b).

References: Morales et al. 2006 [10], Schreier et al. 1978 [26]