

Lists of figures

Figure	Page
2.1 Oxidative modification hypothesis model.....	7
2.2 Purposed new concept of oxidized LDL.....	8
2.3 Basic reaction sequence of lipid peroxidation.....	10
2.4 Typical absorption profile at 234 nm of conjugated diene formation produced during oxidation of isolated LDL by Cu_2SO_4 <i>in vitro</i>	11
2.5 Depicted concept of oxLDL-mediated LOX-1 in atherosclerosis.....	15
2.6 Regulatory events and their dysregulation depend on the duration of the change in ROS or RNS concentration. ROS and RNS normally occur in living tissues at relatively low steady- state levels.....	17
2.7 ROS generated by heavy metal and clearance by endogenous antioxidant enzymes.....	19
2.8 The subcellular localization of three SOD isoforms: CuZn-SOD located primary in cytosol, Mn-SOD localized in mitochondria, and extracellular CuZn-SOD (Ec-SOD) located at cell membrane.....	23
2.9 Hypothetical scheme illustrating the possibility of divergent roles of eNOS in atherosclerosis	26
2.10 ROS impair vascular function.....	28
2.11 Hypothetical scheme illustrating the possibility of divergent roles of eNOS in atherosclerosis	29
3.1 Relative Electrophoresis Migration distance (REM) on agarose gel electrophoresis.....	34
3.2 Kinetics of conjugated diene formation by continuous monitoring of absorbance at 234 nm.....	37
3.3 Measurment of standard curve of NO.....	42
3.4 The reaction of determined xanthine oxidase given SOD.....	43

Lists of figures (Continue)

Figure	Page
3.5 Standard of superoxide dismutase (SOD) concentration.....	43
4.1 Showing the lag phase (min) of mildly degree oxLD group.....	49
4.2 Showing the lag phase (min) of moderately degree oxLDL group.....	50
4.3 Showing the lag phase (min) of fully degree oxLDL group.....	50
4.4 Relative electrophoretic mobility (REM) of both moderately and fully oxLDL was shown REM was calculated from the distance of oxLDL band and BSA band (s/a).....	51
4.5 SDS-PAGE of apo B fragmentation.....	52
4.6 LOX-1 expression activated by 40 and 80 µg/ml oxLDL in various doses and degree oxidation: mildly, moderately and fully oxidation on 1.5 % gel electrophoresis.....	54
4.7 Quantitation of LOX-1 expression in percentage of expression was presented with significant difference when compared with control (*) and among groups (#).....	55
4.8 Showing LOX-1 expression induced by 10 µM DFO pretreatment and various degree oxidation. Doses of oxLDL as indicated in each lane.....	57
4.9 (a) Percentage of LOX-1 expression of 40 µg/ml oxLDL (b) and 80 µg/ml oxLDL in 10 µM DFO pretreatment when compared with control (*) and among groups (#).....	58
4.10 Inducible expression of LOX-1 pretreated with 0.3 mM EDTA and oxLDL in various doses and degrees.....	60
4.11 (a) Quantitation of LOX-1 expression of 0.3 mM EDTA pretreatment group compared with 40 µg/ml oxLDL group. (b) LOX-1 expression activated by 80 µg/ml oxLDL compared with those of 0.3 mM EDTA pretreatment group.....	61

Lists of Figures (Continue)

Figure	Page
4.12 Inducible expression of LOX-1 pretreated with 100 µg/ml BHT and oxLDL in various doses and degree	63
4.13 (a) LOX-1 expression activated by 40 µg/ml oxLDL and 100 µg/ml BHT pretreatment. (b) LOX-1 expression activated by 80 µg/ml oxLDL and 100 µg/ml BHT pretreatment.....	64
4.14 Showing the standard curve of SOD activity (U/ml).....	65
4.15 SOD activity in various doses of moderately oxLDL (U/ml/mg protein).....	66
4.16 Showing the SOD activity in 10 µM DFO pretreatment group and doses of 40 and 80 µg/ml moderately oxLDL.....	67
4.17 Showing the SOD activity in 0.3 mM EDTA pretreatment group and doses of 40 and 80 µg/ml moderately oxLDL.....	68
4.18 SOD activity in pretreatment group with 100 µg BHT and doses of 40 and 80 µg/ml moderately oxLDL.....	69
4.19 Showing the expression of eNOS induced by oxLDL in various doses and degree oxidation on 1.5 % agarose gel electrophoresis: mildly and fully oxLDL (a); moderately oxLDL (b).....	72
4.20 Significant difference of eNOS expression induced by oxLDL in various degree oxidation and doses are shown.....	73
4.21 Showing the inducible eNOS expression of each 10 µM DFO treatment group.....	74
4.22 Significant difference of eNOS expression induced by oxLDL in 10 µM DFO pretreatment group is shown.....	75
4.23 Inducible eNOS expression of each treatment group.....	76
4.24 Significant difference of eNOS expression in 0.3 mM EDTA...	77
4.25 Inducible eNOS expression of each treatment group in 100 µg/ml BHT.....	78

Lists of figures (Continue)

Figure	Page
4.26 Significant difference of eNOS expression in 100 µg BHT.....	79
4.27 Showing the standard curve of NO at 25, 50, 100, 150 and 200 nM when 24.928 pA = 1nM.....	80
4.28 NO production induced by various doses of moderately oxLDL (b, c) is correspondent with eNOS expression (a).....	81
4.29 Real-time measurement of NO released and recorded as current in pA of 40 µg/ml in moderately and fully oxidation of LDL with 10 µM DFO pretreatment (a). Statistically significant difference of each pretreatment group (b).....	83
4.30 Real-time measurement of NO release and was recorded as current in pA of various doses and degree oxLDL with 10 µM DFO pretreatment (a). Significant difference of each pretreatment group (b).....	84
4.31 NO release was detected in BHT pretreatment and various doses and degree oxidation of oxLDL by biosensor probe (a) Data are presented as mean \pm SEM (b).....	86
4.32 (a) Immunohistochemistry of anti-p38 MAPK activity and measured mean density by using image Proplus analysis program, (b) negative control; 3,3'- Diaminobenzidine (DAB), (c) negative control; Hematoxylin.....	87
4.33 Immunohistochemistry of p38 MAPK which demonstrated in control group (upper) and 80 µg/ml fully oxidized LDL group (lower).....	88
4.34 Mean density of p38 MAPK activity activated by various doses of oxLDL moderately and fully oxidation.....	89

Lists of figures (Continue)

Figure	Page
4.35 Immunohistochemistry of p38 MAPK of 0.3 mM EDTA pretreatment group with 40 µg/ml moderately oxidized LDL group (upper) and those with 40 µg/ml fully oxidized LDL group (lower).....	90
4.36 Mean density of p38 MAPK activity of 0.3 mM EDTA pretreatment group with various doses of oxLDL in moderately and fully degree oxidation.....	91
4.37 Immunohistochemistry of p38 MAPK in 80 µg/ml fully oxLDL group (upper) and 10 µM DFO with 80 µg/ml fully oxidized LDL group (lower).....	92
4.38 Mean density of p38 MAPK activity of 10 µM DFO with moderately and fully oxLDL in various doses.....	93
4.39 Immunohistochemistry of p38 MAPK activity of 80 µg/ml fully oxidized LDL group (upper) and 100 µg BHT with 20 µg/ml fully oxidized LDL group(lower).....	94
4.40 Mean density of p38 MAPK activity of 100 µg/ml BHT pretreatment with oxidized LDL in various doses and degrees....	95
4.41 Intacted endothelium and normal vasculature of day 6 in control group.....	96
4.42 Damaged endothelium, loose ground substance, scanty fibroblast and invaded vascular smooth muscle cell (VSMC) were represented in various doses and degree of oxLDL on day 6.....	97
4.43 Morphology of 80 µg/ml moderately oxLDL with 10 µM DFO compared with 10 µM DFO and 80 µg/ml.....	98

Lists of figure (Continue)

Figure	Page
4.44 Morphology changes of 0.3 mM EDTA with 40 µg/ml and 80 µg/ml in moderately and fully oxidation of oxLDL compared with positive control 0.3 mM EDTA on day 6 of culture.....	99
4.45 Morphology changes of 80 µg/ml moderately ox LDL with and without 100 µg BHT compared with positive control 100 µg BHT on day 6 of culture.....	100
4.46 Depicted mechanisms of LOX-1 upregulation by oxLDL through intracellular ROS/RNS and redox signaling.....	104