Supplementary Table S2. Singlet oxygen ($^1O_2$) quenching activity of common carotenoids [k($10^9 M^{-1}s^{-1}$)]

$^1O_2$ generator			EDN			EDN		NDPO$_2$		Phenazine			EP
Reference			[1]			[2]		[3]	[4]	[5]		[6]	[7]
Method			TD*			TD*		TD*		Photosentizing/pulse laser			TD*
Detection			Luminescence			Luminescence		Luminescence		Luminescence			Absorbance of DPBF
Solvent			CDCl$_3$	CDCl$_3$/ CD$_3$OD (2:1)	DMF/ CDCl$_3$ (9:1)	CDCl$_3$	CDCl$_3$/ CD$_3$OD (2:1)	EtOH/CHCl$_3$ /D$_2$O (50:50:1)		Benzene	Toluene	Benzene	EtOH/CHCl$_3$/D$_2$O (50:50:1)
Carotenoid	*n**	-OH											
Dodecapreno-β-carotene	19	0	-	-	-	-	-	-	-	23	29	-	-
Decapreno-β-carotene	15	0	-	-	-	-	-	13.3	-	20	21.0	-	-
C50-Astaxanthin	15+2	2						13.0	-	-	-	-	-
Astaxanthin (AX)	**11+2**	**2**	**2.2**	**1.8**	**5.4**	**2.2**	**1.8**	**9.0**	**24**	**14**	-		**11.7**
Adonirubin	11+2	1	-	-	-	-	-	-	-	-	-	10.4	-
Anonixanthin	11+1	2	-	-	-	-	-	-	-	-	-	12.3	-
Canthaxanthin	11+2	0	2.2	1.3	2.0	-	1.2	10.2	21	-	13	-	-
Zeaxanthin	11	2	2.0	0.73	3.4	1.9	0.12	-	10	12	-	-	11.2
β-Cryptoxanthin	11	1	2.0	0.27	1.7	-	-	-	6	-	-	-	7.0

all-*trans* β-Carotene	11	0	2.2	0.28	1.1	2.2	0.049	8.4	14	13	14	-	10.8
9-*cis* β-Carotene	11	0	-	-	-	-	-	-	-	11	9	-	-
15-*cis* β-Carotene	11	0	-	-	-	-	-	-	-	11	12	-	-
Lycopene	11	0	3.0	1.4	3.4	-	-	8.8	31	17	-	-	14.0
Capsanthin	10+1	2						-		-	-	-	12.1
Lutein	10	2	0.61	0.26	2.1	0.8	-	-	8	16	-	6.64	8.1
α-Carotene	10	0	0.66	0.23	0.93	-	-	-	19	-	8.2	-	10.0
Capsorbin	9+2	2	-	-	-	-	-	-	-	-	-	12	-
Fucoxanthin	9+1	2	0.29	0.075	0.97	-	0.005	-	-	-	-	-	-
Tunaxanthin	9	2	-	-	-	0.15	-	-	-	-	-	-	-
Violaxanthin	9	2	-	-	-	-	-	-	-	16	-	-	-
Septapreno-β-Carotene	9	0	-	-	-	-	-	-	-	-	-	1.38	-
Bixin	9(+2)	0	-	-	-	-	-	-	-	9.2	-	-	-
7,7′-Dihydro-β-Carotene	8	0	-	-	-	-	-	-	-	-	-	0.3	-
α-Tocopherol	N/A	N/A	0.02	0.0039	0.049	-	-	-	0.28	-	-	-	0.13

*Numbers were given as number of conjugation length of C=C(+C=O) of each carotenoid.

EDN, 1,4-dimethylnapthalene endoperoxide; NDPO2, of 3,3'-(1,4-naphthylene)dipropionate endoperoxide; EP, 1-methylnaphthalene-4-

propionate endoperoxide; DPBF, 1,3-diphenylisobenzofuran; DMF, N,N-dimethylformamide.

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