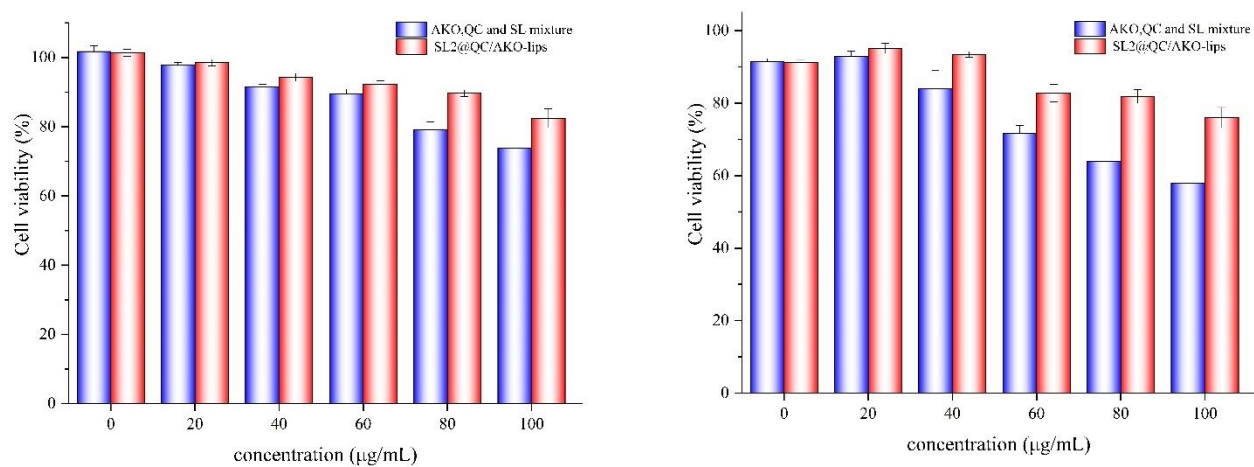


**Quercetin**

**Fig.1** Chemical structure of quercetin



**Fig.2** Effect of SL2@QC/AKO-lips on cell viability in HepG2 cells. Cell viability in un-treated with OA-BSA (a), Cell viability in treated with OA-BSA (b).

**Table S1.** Lipid class composition of AKO

class	abbreviation	AKO content (%)	class	abbreviation	AKO content (%)
Acyl Carnitine	AcCa	0.056	Zymosterol ester	ZyE	0.082
Acyl Hexosyl Sitolsterolester	AcHexSiE	0.001	Lysophosphatidylethanol	LPET	0.016
Ceramide	Cer	0.319	Lysophosphatidylglycerol	LPG	0.001
Dihexosyl N-acetylhexosyl ceramide	CerG2GNAc1	0.003	Monoglyceride	MG	0.079
Trihexosyl N-acetylhexosyl ceramide	CerG3GNAc1	0.002	O-Acyl-(gamma-hydroxy) FA	OAHFA	0.007
Ceramide phosphate	CerP	0.042	Phosphatidic acid	PA	0.011
Cholesterol ester	ChE	0.06	Phosphatidylcholine	PC	37.692
Campesterol ester	CmE	0.002	Phosphatidylethanolamine	PE	1.243
Coenzyme Q	Co	0.003	Phosphatidylglycerol	PG	0.001
Cyclicphosphatidic acid	cPA	0.012	Phosphatidylinositol	PI	0.004
Diglyceride	DG	4.895	Phosphatidylmethanol	PMe	0.001
Fatty acid	FA	10.449	Sphingomyelin	SM	0.041
Hexosyl ceramide	Hex1Cer	0.937	Sphingosinebases	SPH	0.003
Dihexosyl ceramide	Hex2Cer	0.013	Sphingosine phosphate	SPHP	0.396
Lysophosphatidic acid	LPA	0.015	Stigmasterolester	StE	0.001
Lysophosphatidylcholine	LPC	14.053	Triglyceride	TG	28.958
Lysophosphatidylethanolamine	LPE	0.538	Wax esters (fatty acid esters)	WE	0.062

**Table S2.** Fatty Acids Composition of AKO

FAs	AKO content (%)	FAs	AKO content (%)
C12:0	0.063±0.005	C20:2, n6c	0.208±0.004
C14:0	5.155±0.006	C20:1, n9c	3.470±0.003
C15:0	0.205±0.003	C20:3, n3c	0.079±0.002
C16:0	15.501±0.003	C20:1, n7c	2.328±0.025
C16:3, n1c	0.608±0.001	C20:0	0.109±0.001
C16:4, n4c	0.367±0.012	C21:5, n3c	0.902±0.005
C16:1	0.878±0.001	C21:0	0.028±0.001
C17:1, n7c	0.292±0.002	C22:6, n3c	23.821±0.028
C17:0	0.284±0.002	C22:5, n3c	1.802±0.015
C18:3, n6c	0.152±0.001	C22:1, n9c	0.611±0.003
C18:4, n3c	2.921±0.001	C22:1, n11c	0.253±0.004
C18:2, n6c	1.634±0.006	C23:0	0.013±0.001
C18:1, n9c	7.390±0.004	C24:1, n9c	0.178±0.009
C18:0	1.364±0.0012	SFA	22.723±0.017
C20:4, n6c	0.711±0.015	MUFA	15.400±0.009
C20:5, n3c	27.516±0.092	PUFA	61.807±0.106
C20:3, n6c	0.348±0.009	ω-3 PUFA	57.843±0.002
C20:4, n3c	0.801±0.009	ω-6 PUFA	3.053±0.002