TABLE 1. Effects of plant polyphenolic extracts on HCC *in vitro* models

Biological Model (cell line)	Plant Polyphenolic Extract	Extraction Solvent	Biological Activity	CC50	References
HepG2	Spinach (*Spinacia oleracea*)	80% acetone (1:2 w/v)/ ethyl acetate	↓ cell viability	42.51 mg/mL (96 h)	Chu *et al*. 2002
	Cabbage (*Brassica oleracea*or)		↓ cell viability	56.26 mg/mL (96 h)	
	Red pepper (*Capsicum)*		↓ cell viability	76.75 mg/mL (96 h)	
	Yellow onion (*Allium)*		↓ cell viability	100.25mg/mL (96 h)	
	Broccoli (*Brassica oleracea)*		↓ cell viability	112.74 mg/mL (96 h)	
	Potato (*Solanum tuberosum* L)		↓ cell viability	ND	
HepG2	Cranberry *(Vaccinium macrocarpon Aiton)*	80% acetone (1:2 w/v)/ ethyl acetate	↓ cell viability	14.5 mg/mL (96 h)	Sun *et al*., 2002
	Lemon *(Citrus limon)*		↓ cell viability	30.6 mg/mL (96 h)	
	Apple *(Malus domestica)*		↓ cell viability	49.4 mg/mL (96 h)	
	Strawberry *(Fragaria)*		↓ cell viability	56.3 mg/mL (96 h)	
	Red grape *(Vitis vinifera)*		↓ cell viability	71 mg/mL (96 h)	
	Banana (*Musa acuminata)*		↓ cell viability	110 mg/mL (96 h)	
	Grapefruit *(Citrus paradisi Macfad)*		↓ cell viability	130.1 mg/mL (96 h)	
HepG2	*Coptis chinensis*	Boiling water	↓ cell viability	0.020(48 h)	Lin *et al*., 2004
Hep3B			↓ cell viability	0.055 mg/mL (48 h)	
SK-Hep1			↓ cell viability	0.007mg/mL (48 h)	
PLC/PRF/5			↓ cell viability	0.035 mg/mL(48 h)	
SK-Hep1			↓ cell viability	0.015mg/Ml (48 h)	

PLC/PRF/5			↓ cell viability	0.057mg/mL (48 h)	
HepG2	Strawberry *(Fragaria)*	0.8% HCl in methanol/water (1:1)or acetone:water (7:3)	↓ cell viability; ↑ of DNA fragmentation; ↑ cells subG1 phase	0.2 mg/mL (18 h)	Ramos *et al.,* 2005
HepG2	Plum (*P.salicina*Lindl. cv. Soldam)	0.8% HCl in methanol and water (1:1)/ acetone: water (7:3)	↓ cell viability; ↑ DNA fragmentation; ↑ cells subG1 phase	0.75 mg/mL (18 h)	
		60% acetone	↓ cell viability; ↓ FADD and TRADD; ↑ caspase 3, 7, 8	ND	Yu *et al*., 2009
Hep3B	*Euchresta formosana*	95% ethanol	↓ cell viability; ↑ arrest in S phase; DNA fragmentation; ↑ caspase 3; ↑ ROS, cytoplasmatic Ca2+; ↓ mitochondrial membrane potential; ↑ p21, p27, cytochrome c, Bax, tBid, caspases-9, -3, -7, -8 and -12; ↓ Bcl-x	ND	Hsu *et al*., 2007
SK-Hep1	*Pinus densiflora*	80% methanol	↓ invasion, migration; ↓ MMP-2/9;	ND	Lee *et al*., 2007
Hep3B	*Vitis coignetiae* Pulliat	0.1% HCl methanol	↓ cell viability; ↑ caspase 9, ↑ PARP degradation ; ↓mitochondrial membrane potential; ↓ Bid levels, ↓ Bcl-2, xIAP, cIAP-1/2; ↓ cell migration	ND	Shin *et al*., 2009
HepG2	*Solanum nigrum*	Boiling water	↓ cell viability; ↓ cell migration; ↓ p38; ↑ ERK	0.86 mg/mL (24 h)	Yang *et al.*, 2010
		Boiling water	↓ cell viability;↑ apoptosis; ↑ phospho-JNK; ↑ Bax; ↑ cytosolic cytochrome c; ↑caspase 3; ↑ LC3-II; ↓ Bcl-2; ↓ Akt, ↑ autophagy	0.625 mg/mL (24 h)	Lin *et al*., 2007
		Boiling water	↓ cell viability; ↑ G2/M phase arrest, ↑ subG1 phase; ↓ CDK1 activity; ↑ caspase 3, 8, 9; ↓ Bcl-2 and Bid	0.75 mg/mL (24 h)	Wang *et al.*, 2010
HepG2	*Pinus massoniana* bark	Boiling water	↓cell viability; ↑ G2/M phase; ↑ caspases 8, 9, 3 activities; ↓ Bcl-2, Bid; ↓ phosphorylation of IkB	0.125 mg/mL (48 h)	Ma *et al,.* 2010
HepG2	*Ardisia* tea	Boiling water	↓ cell viability; ↑ arrest in G1 phase; ↓ topoisomerase II activity	ND	*Newell et al,* 2010
HepG2	*Morus albaL.*	Boiling water	↓ cell viability; ↑ caspasas; ↓ topoisomerase IIa activity and expression; ↓ p27 Kip1	0.204 mg/mL (24 h)	Naowaratwattana et al., 2010

		100% methanol	↓ cell viability; ↑ caspasas ; ↑ G2/M phase; ↓ topoisomerase II activity and expression; ↓ p27 Kip1	0.033 mg/mL (24 h)	
		50% methanol	↓ cell viability; ↑ caspasas ; ↑ G2/M phase; ↓ topoisomerase II activity and expression; ↓ p27 Kip1	0.079 mg/mL (24 h)	
		1-butanol	↓ cell viability; ↑ caspasas ; ↑ G2/M phase; ↓ topoisomerase II activity and expression; ↓ p27 Kip1	0.036 mg/mL (24 h)	
HepG2	*Solanum pinnatisectum*	80% acetone	↓ cell viability	0.0052 mg/mL (24 h)	Wang *et al*., 2011
Hep3B	*Picrorhiza kurroa*	Methanol or water	↓ cell viability; ↑ DNA fragmentation	Aqueous: 0.123±7.8 mg/mL (24h) Methanolic: 0.0326 ± 10.7 mg/mL (24h)	Rajkumar *et al*., a2011
Hep3B	*Rheum emodi* Rhizome	Methanol and water	↓ cell viability	ND	Rajkumar *et al*.b, 2011
HepG2	*Lindera obtusiloba*	Water	↓ cell viability; ↑ caspase 3/7; ↓ invasive potential; ↓ VEGF expression; ↓ HIF-1a; ↓ PPARg; ↓ iNOS	0.1 mg/mL (24 h)	Freise *et al*., 2011
Hep3B			↓ cell viability; ↑ caspase 3/7; ↓ invasive potential; ↓ VEGF expression; ↓ HIF-1a; ↓ PPARg; ↓ COX-2; ↓basal phosphorylation of Akt, Stat3 and Erk; ↓ NF-kB	0.1 mg/mL (24 h)	
Huh-7			↓ cell viability; ↑ caspase 3/7; ↓ invasive potential; ↓ VEGF expression; ↓ HIF-1a; ↓ PPARg; ↓ NF-kB	0.1 mg/mL (24 h)	
SK-Hep1			↓ cell viability; ↑ caspase 3/7; ↓ invasive potential; ↓ VEGF expression; ↓ HIF-1a; ↓ PPARg; ↓ COX-2; ↓ iNOS; ↓basal phosphorylation of Akt, Stat3 and Erk; ↓ NF-kB	0.1 mg/mL (24 h)	
HepG2	*Lonicera japonica* Thunb.	70% methanol	↓ cell viability; ↓ MMP-2; ↓ cell motility; ↑ G0, G2/M; ↓ CDC25C, cyclin B1, CDK1; ↓ Bcl-xL; ↑ Bak; ↓ pro caspase 3/9, PARP; ↑ PI3k/Akt dephosphorylation; ↑ JNK, p38 MAPK phosphorylation	0.7 mg/mL (48 h)	Park *et al*., 2011
HepG2	*Camellia ptilophylla*	Water at 98°C	↓ cell viability; ↑ cells in subG1 phase; ↑ caspase 3, , p53, p21, p27, Bax levels; ↑ PARP degradation ↓ Bcl-2	0.292 mg/mL (72 h)	Yang *et al,*2012

Hep3B	Garlic (*Allium sativum*)	80% methanol/ hexane, chloro-form and n-butanol	↓ cell viability; ↑ nuclei with chromatin condensation and apoptotic bodies; ↑cells in subG1 phase; ↓ Bcl-2, Bcl-xL, Bid; ↓ mitochondrial membrane potential; ↑ caspases 8, 9, 3 activities; ↑ PARP degradation; ↑ intracellular ROS	ND	Kim *et al.*, 2012
HepG2	*Pulsatilla koreana*	50% aqueous ethanol/ acetone	↓ cell viability	ND	Hong et al., 2012
Huh-7			↓ cell viability; ↑ Bax, caspase 3, PARP degradation; ↓ HIF-1α, VEGF; ↓ migration		
HepG2	*Oryza sativa* (Purple Rice extract)	Dichloromethane or methanol	↓ cell viability; ↓ mitochondrial membrane potential; ↑ caspase 3, 9 activities	0.179 mg/mL (48 h)	Banjerdpongchai *et al.* 2013
HepG2	*Abrus precatorius* leaf	Hexane/ ethyl acetate/ethanol/ water	↓ Cell viability	0.037 mg/mL (48 h)	Gul *et al.*, 2013
SK-Hep1	*Saussurea involucrata*	95% ethanol	↓ cell viability; ↓ adhesion; ↓ migration; ↓ motility; ↓ aggregation; ↓ MMP-2, MMP-9;	0.173 mg/mL (24 h)	Byambaragchaa *et al.*, 2013
Huh-7	*Dendropanax morbifera* Léveille	100% methanol	↓ cell viability; ↓ migration; ↑ apoptosis; ↑ senescence; ↑ p16, p53; ↓ phospho pRb; ↑ Raf; ↓ ERK activation	ND	Hyun *et al.*, 2013
Huh-BAT			↓ cell viability	ND	
HepG2	*Costus speciosus*	100% methanol	↓ cell viability; ↑ traslocation of phosphatydil serine; ↑ caspasas 3; ↓ mitochondrial membrane potential; ↓ G0/G1; ↑ S, G2/M phase	0.093 mg/mL (24 h) 0.077 mg/mL (48 h)	Nair *et al.*, 2014

↑ increase, ↓decrease; ND: not determined

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