Supplementary Table1 Summary of all retrieved pharmacological documents

Type	Polysaccharide	Sources	Type of extract	Model	Dosage	Control	References
Plant	SCLP	*Smilax china* L.	Tuberous root	APAP-induced mice	300 and 600 mg/kg (i.g.)	Saline	(Wang et al., 2022)
	SCAP	*Schisandra chinensis* (Turcz.) baill	Fruit	APAP-induced mice	10, 20, 40 mg/kg (i.g.)	Saline	(Che et al., 2019)
	PPMPs	*Polygonum multiflorum* Thunb	Tuberous root	APAP-induced mice	100 and 200 mg/kg (i.g.)	Saline	(Wang et al., 2023)
	RPMPs	*Polygonum multiflorum* Thunb	Tuberous root	APAP-induced mice	100 and 200 mg/kg (i.g.)	Saline	(Wang et al., 2023)
	PVSP	*Prunella vulgaris* L.	Aerial part	INH-induced mice	100 mg/kg (i.g.)	Saline	(Wang et al., 2021)
	EPPS	*Echinacea purpurea* (L.) Moench	Tuberous root	APAP-induced mice	20, 50 mg/kg (i.g.)	Saline	(Yu et al., 2022)
	EP	*Enteromorpha prolifera*	Whole plant	Alcohol-induced mice	50, 100 mg/kg (i.g.)	Saline, Silymarin	(Yan et al., 2024)
	ASP	*Angelica sinensis (Oliv.)* Diels	Tuberous root	Alcohol-induced mice	100, 300 mg/kg (i.g.)	Saline	(He et al., 2022)
				Alcohol-induced AML12 cells	100, 300 μg/ml	Distilled water	
	PFPs	*Polygala fallax* Hemsl	Tuberous root	HFD and alcohol-induced mice	50, 100, 200 mg/kg (i.g.)	Saline, Silymarin	(Lv et al., 2024)
				Alcohol-induced HepG2 cells	100 μg/ml	Distilled water	
	PNP80b-2	*Pinus koraiensis* Sieb. et Zucc.	Fruit	Alcohol-induced mice	200, 400 mg/kg (i.g.)	Saline, Bifendate	(Qu et al., 2020)
	DOP	*Dendrobium officinale* Kimura et Migo	Aerial part	Alcohol-induced Rats	100, 400 mg/kg (i.g.)	Saline, Silymarin	(Yang et al., 2020)
	EPP80	*Echinacea purpurea* (L.) Moench	Aerial part	Alcohol-induced mice	100, 200, 400 mg/kg (i.g.)	Saline, Bifendate	(Jiang et al., 2021)
	AHPN80	*Alhagi sparsifolia* Shap	Aerial part	Alcohol-induced mice	200, 600 mg/kg (i.g.)	Saline, Silymarin	(Song et al., 2024)
				H_2O_2-induced HepG2 cells	50, 100, 200 μg/ml	Distilled water	
	SCP	*Schisandra chinensis*	Fruit	Alcohol-induced mice	14.78, 29.55, 59.1 mg/kg (i.g.)	Saline	(Chi et al., 2024)

		(Turcz.) baill					
	NCVP	*Nostoc commune* Vauch.	Whole plant	Alcohol-induced mice	100, 200, 400 mg/kg (i.g.)	Saline, Silymarin	(Yang et al., 2023)
	RIP	*Isatis indigotica* Fort.	Tuberous root	HepG2.2.15 cells	50, 100, 200 μg/ml	Culture medium, Lamivudine	(Wang et al., 2020)
	VCP	*Viscum coloratum* (Kom.) Nakai	Aerial part	HepG2.2.15 cells	1, 10, 100, 1000 μg/ml	Culture medium, Lamivudine	(Chai et al., 2019)
	FP-1	*Linum usitatissimum* L.	Aerial part	HepG2.2.15 cells	62.5, 125, 250, 500, 1000 μg/ml	Culture medium, Lamivudine	(Liang et al., 2019)
	SLP-4	*Saussurea laniceps* Hand.-Mazz.	Aerial part	HepG2.2.15 cells	62.5, 125, 250, 500, 1000 μg/ml	Culture medium, Lamivudine	(Chen et al., 2019)
	ASP	*Angelica sinensis (Oliv.)* Diels	Tuberous root	HFD-induced mice	160 mg/kg (i.g.)	Saline	(Luo et al., 2023)
	APS	*Astragalus membranaceus* (Fisch.) bunge.	Tuberous root	HFD-induced mice	8% (p.o.)	Normal HFD diet	(Zheng et al., 2024)
	CLP	*Chaetomorpha linum*	Whole plant	HFD-induced mice	50, 150 mg/kg (i.g.)	Saline	(Chu et al., 2022)
	LBP	*Lycium barbarum* L.	Fruit	HFD-induced Rats	50 mg/kg (p.o.)	Saline	(Gao et al., 2021)
	MDG	*Ophiopogon japonicus*	Tuberous root	HFD-induced mice	5%, 8% (p.o.)	Normal HFD diet	(Zhang et al., 2022)
	SMRR	*Salviae miltiorrhizae* Bunge	Fibrous root	HFD-induced mice	10, 20 mg/kg (i.g.)	Saline	(Li et al., 2022)
	PCP1	*Polygonatum cyrtonema* Hua	Tuberous root	HFD-induced mice	200, 400 mg/kg (i.g.)	Saline	(Liu et al., 2022)
	CPP	*Crataegus pinnatifida* Bunge	Fruit	HFD-induced mice	100, 250, 500 mg/kg (i.g.)	Saline	(Hao et al., 2024)
	PAMK	*Atractylodes macrocephala* Koidz.	Tuberous root	HFD-induced mice	200 mg/kg (p.o.)	Normal HFD diet	(Chen et al., 2024)
	YJ3A1	*Rosa chinensis* Jacq.	Aerial part	CCl_4-induced mice	25, 50 mg/kg (i.g.)	Saline, Obeticholic acid	(Jing et al., 2024)
	CPP-1	*Codonopsis pilosula*	Fibrous root	HFD-induced mice	180 mg/kg (i.g.)	Saline, Simvastatin	(Ma et al., 2024)

		(Franch.) Nannf.					
	SP	*Hippophae rhamnoides* L.	Fruit	HFD-induced Rats	200 mg/kg (i.g.)	Saline, berberine hydrochloride	(Yan et al., 2024)
	APS	*Astragalus membranaceus* (Fisch.) Bge.	Tuberous root	Alcohol-induced Rats	200, 400 mg/kg (i.g.)	Saline	(Sun et al., 2023)
	BPS	*Bletilla striata* (Thunb.) Reichb. f	Tuberous root	CCl_4-induced mice	75, 150, 300 mg/kg (i.g.)	Saline, Silymarin	(Jiang et al., 2023)
	DOP	*Dendrobium officinale* Kimura et Migo	Tuberous root	CCl_4-induced Rats	200, 400, 800 mg/kg (i.g.)	Saline	(Wang et al., 2020)
	CPP-A-1	*Codonopsis pilosula* (Franch) Nannf.	Fibrous root	CCl_4-induced mice	50, 100 mg/kg (i.g.)	Saline, Colchicine	(Meng et al., 2023)
	AMP	*Aronia melanocarpa* (Michx.) Elliott	Fruit	TAA-induced mice	200, 400 mg/kg (i.g.)	Saline, Colchicine	(Zhao et al., 2022)
	ASP	*Angelica sinensis* (Oliv.) Diels	Tuberous root	CCl_4-induced mice	200 mg/kg (i.g.)	Saline	(Wang et al., 2020)
	ABWW	*Achyranthes bidentata* Bl	Tuberous root	CCl_4-induced mice	100, 200 mg/kg (i.p.)	Saline, Obeticholic acid	(Dai et al., 2024)
	BPS	*Ocimum basilicum* L.	Aerial part	MHCC97H tumor bearing mice	100, 200, 400 mg/kg (i.g.)	Saline, Sorafinib	(Feng et al., 2019)
	ASP	*Asparagus officinalis* L.	Whole plant	SK-Hep1and Hep-3B cells	1.25, 2.5, 5, 10, 20, 30 mg/ml	Culture medium	(Cheng et al., 2019)
	MEP	*Morus alba* L.	Fruit	DEN/PB-induced Rats	50, 100 mg/kg (i.g.)	Saline	(Li et al., 2021)
	PFS-1	*Sophora japonica* L.	Fruit	SMMC 7721 cells	125, 250, 500, 1000, 2000 μg/ml	Culture medium, Docetaxel	(Zhong et al., 2022)
	PFS-2	*Sophora japonica* L.	Fruit	SMMC 7721 cells	125, 250, 500, 1000, 2000 μg/ml	Culture medium, Docetaxel	(Zhong et al., 2022)
	DP	*Taraxaci Herba*	Fibrous root	Hepa1-6 or H22 tumor bearing mice	200 mg/kg (i.p.)	Saline	(Ren et al., 2021)
	APS	*Astragalus*	Tuberous root	Hep3B tumor bearing	50 mg/kg (i.p.)	Saline,	(Li et al.,

		membranaceus (Fisch.) Bge.		mice		Doxorubicin	2023)
	NPPN	*Panax notoginseng* (Burk.) F.H.Chen	Fibrous root	H22 tumor bearing mice	93, 188, 375 mg/kg (i.g.)	Saline, Cyclophosphamide	(Liu et al., 2021)
Fungi	Phps	*Phellinus linteus*	Mycelia	APAP-induced mice	40, 60, 80 mg/kg (i.p.)	Saline	(Zhao et al., 2022)
	PL-N1	*Phellinus linteus*	Mycelia	APAP-induced mice	10, 50, 100 mg/kg (i.g.)	Saline, Silibinin	(Chen et al., 2020)
	PFP-1	*Pleurotus geesteranus*	Mycelia	Alcohol-induced mice	400 mg/kg (i.g.)	Saline, Bifendate	(Song et al., 2021)
	MEP	*Morchella esculenta*	Mycelia	Alcohol-induced mice	50, 100 mg/kg (i.g.)	Saline, Silymarin	(Teng et al., 2023)
	PSP-1b1	*Coriolus versicolor*	Mycelia	Alcohol-induced mice	80, 160 mg/kg (i.g.)	Saline, Silymarin	(Wang et al., 2019)
	PCP-1C	*Poria cocos* (Schw.) Wolf	Sclerotium	Alcohol-induced mice	25, 50, 100 mg/kg (i.g.)	Saline, Bifendate	(Jiang et al., 2022)
	ORPS	*Oudemansiella raphanipies*	Mycelia	HFD-induced mice	50, 100, 200 mg/kg (i.g.)	Saline	(Jiang et al., 2022)
	CVP	*Coriolus versicolor*	Mycelia	HFD-induced mice	100, 400 mg/kg (i.g.)	Saline, Atorvastatin	(Tang et al., 2023)
	PCP	*Poria cocos* (Schw.) Wolf	Sclerotium	HFD-induced mice	50, 100, 200 mg/kg (i.g.)	Saline	(Ye et al., 2022)
	SSP	*Sagittaria sagittifolia* L.	Mycelia	MCD-induced mice	0.8 g/kg (p.o.)	Saline	(Deng et al., 2020)
	ASRP	*Stropharia rugoso-annulata*	Mycelia	HFD-induced mice	400 mg/kg (i.g.)	Saline, Simvastatin	(Li et al., 2022)
	GLP	*Ganoderma lucidum* (Curtis) P. Karst.	Mycelia	CCl_4-induced mice	150, 300 mg/kg (i.g.)	Saline, Colchicine	(Chen et al., 2023)
	CP	*Coprinus comatus* (Muell.:Fr.) Gray	Mycelia	CCl_4-induced mice	200, 400 mg/kg (i.g.)	Saline	(Zhao et al., 2022)
				LPS-induced LX-2 cells	60, 120, 240 μg/ml	Phosphate buffered saline	
	GLPS	*Ganoderma lucidum* (Curtis) P. Karst.	Mycelia	Hepa1-6 tumor bearing mice	50, 100, 200 mg/kg (i.g.)	Saline	(Li et al., 2023)
				Hepa1-6 cells	200 μg/ml	Culture medium	
	GFAP	*Grifola frondosa* (Dicks.) Gray	Mycelia	H22 and HepG2 cells	12.5, 25, 50, 100, 200, 400, 600, 800 μg/ml	Culture medium	(Yu et al., 2020)

	POP	*Pleurotus ostreatus*	Mycelia	H22 tumor bearing mice	75, 150, 300 mg/kg (i.p.)	Saline, Cyclophosphamide	(Khinsar et al., 2021)
				HepG2 and HCCLM3 cells	300, 400, 500 μg/ml	Culture medium	
	EPS1-1	*Rhizopus nigrum*	Mycelia	HepG2 and HuH7 cells	25, 50, 100, 200 μg/ml	Culture medium	(Yan et al., 2022)
Animal	SEP	*Strongylocentrotus nudus*	Egg	HBV-transgene mice	40 mg/kg (i.p.)	Saline, Lamivudine	(Yu et al., 2023)
				HepG2.2.15 cells	100, 200, 400, 800 μg/ml	Culture medium, Lamivudine	

Supplementary Table 2 Abbreviations

ADH	alcohol dehydrogenase
AKT	protein kinase B
ALD	alcoholic liver disease
ALT	alanine aminotransferase
AMPK	AMP-activated protein kinase
APAP	acetaminophen
ARE	antioxidant response element
AST	aspartate aminotransferase
Bax	BCL-2-associated X
Bcl-2	B-cell lymphoma-2
CAT	catalase
CPT1	carnitine palmitoyltransferase-1
Cur	curcumin
CYP	cytochrome P450 proteins
DNA	deoxyribonucleic acid
DILI	drug-induced liver injury
Dox	doxorubicin
ECM	extracellular matrix
FAK	focal adhesion kinase
H22	hepatoma 22
HBV	hepatitis B virus
HBsAg	hepatitis B surface antigen
HBeAg	hepatitis Be antigen
HepG2	human hepatocellular carcinoma G2
HCC	hepatocellular carcinoma
HIF-1α	hypoxia inducible factor-1α
HO-1	heme oxygenase 1
HSC	hepatic stellate cell
IL-1β	interleukin-1β

IL-6	interleukin-6
IL-22	interleukin-22
JAK	janus kinase
JNK	c-jun N-terminal kinase
LPS	lipopolysaccharide
MAPK	mitogen-activated protein kinase
MCAD	medium-chain acyl-CoA dehydrogenase
MDA	malonaldehyde
NAFLD	Non-alcoholic fatty liver disease
NF-κB	nuclear factor-kappa B
Nrf2	nuclear factor erythroid 2-associated factor 2
PI3K	phosphoinositide 3 kinase
PTRF	polymerase I and transcript release factor
PPARα	peroxisome proliferator-activated receptor α
RNA	ribonucleic acid
ROS	reactive oxygen species
SIRT1	sirtuin 1
Smad	drosophila mothers against decapentaplegic
SOD	superoxide dismutase
STAT	signal transducer and activator of transcription
TGF-β	transforming growth factor β
TLR4	toll-like receptor 4
TNF-α	tumor necrosis factor α
TRIM36	tripartite motif containing 36
VEGF	vascular endothelial growth factor

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