TABLE 1 | Mechanisms of Alkaloids

No.	components and herbs	Level	Mechanism on oxidative stress	Mechanism on inflammation	reference
1	13-Methylberberine	A		inhibiting NLRP3 inflammasome activation via autophagy induction in HUVECs	Peng et al., 2020
2	Berberine	B2		changed Ampk and Nf-κb gene expression	Ma et al., 2020
3	Berberine	B1		promoting autophagy	Ke et al., 2020
4	Berberine	B2	reduced aortic reactive oxygen species (ROS) generation and reduced the serum levels of malondialdehyde (MDA), oxidized low-density lipoprotein (ox-LDL), and interleukin-6 (IL-6)		Tan et al., 2020
5	Berberine	A		activation of the AMPK/mTOR signaling pathway.	Fan et al., 2015
6	betaine	B1		Betaine could inhibit the development of atherosclerosis via anti-inflammation.	Fan et al., 2008
7	Coptisine	B2		inhibiting activation of MAPK signaling pathways and NF-κB nuclear translocation	Feng et al., 2017
8	Dehydrocorydaline	A,B2		targeting macrophage p65- and ERK1/2-mediated pathways	Wen et al., 2021
9	Dendrobine	A	FKBP1A-involved autophagy ox-LDL-treated HUVECs	FKBP1A-involved autophagy ox-LDL-treated HUVECs	Lou et al., 2022
10	Leonurine	A,B2	suppressed the NF-κB signaling pathway	balanced NO production and inhibited NF-κB/P65 nuclear translocation	Ning et al., 2020
11	Tetrahydropalmatine	B2 (Golden hamster	protects against HLP through the TLR4-NF-κB signaling pathway	protects against HLP through the TLR4-NF-κB signaling pathway	Ding et al., 2021

Notes: In Level, A represents in vitro; B represents in vivo; B1 represents rats; B2 represents mice; B3 represents rabbit; C represents network pharmacology.

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TABLE 2 | Mechanisms of Flavonoids

No.	components and herbs	Level	Mechanism on oxidative stress	Mechanism on inflammation	reference
1	6-gingerol	B2		increased plaque formation, elevation of plasma total cholesterol, triglyceride, low-density lipoprotein cholesterin, and proinflammatory cytokines including	Wang et al., 2018
2	Calycosin	B2		improved autophagy through KLF2-MLKL signalling pathway modulation	Ma et al., 2022
3	dihydromyricetin	A,B2		demonstrate that endothelial miR-21-inhibited	Yang et al., 2020
4	Dihydromyricetin	A	activating Akt and ERK1/2, which		Luo et al., 2017
5	Flavone of Hippophae	B2		upregulating CTRP6	Zhuo et al., 2019
6	Flavonoids	A,B2		inhibiting mRNA and protein expression, inhibiting the NF-κB	Liu et al., 2022
7	Formononetin	C	alleviates ox-LDL-induced		Zhang et al., 2021
8	Formononetin	A,B2		regulation of interplay between KLF4 and SRA	Ma et al., 2020
9	Hesperidin	A		alleviate BaP-induced inflammatory response by decreasing IL-1β and TNF-α expression	Duan et al., 2022
10	Hesperidin	B2	pleiotropic effects, including improvement of		Sun et al., 2017
11	Homoplantaginin, dihydrohomoplantagin	A,B2	protected VECs by activating Nrf2		Meng et al., 2022
12	Icariin	B1	associated with the anti-inflammation,		Hu et al., 2016
13	kaempferol	A,B2	PI3K/AKT/Nrf2 pathways		Feng et al., 2021
14	Kuwanon G	A,B2		decreased intracellular lipid accumulation and inflammatory	Liu et al., 2018
15	Morin hydrate	A,B2		activation of the PI3K/Akt1/NFκB signaling pathway	Meng et al., 2021
16	Myricitrin	A,B2	inhibition of p53 gene expression, activation of caspase-3 and the MAPK signaling pathway, and alteration of the patterns of pro-apoptotic and anti-apoptotic gene expression		Sun et al., 2013

17	naringenin	A	activating AMPKα/Sirt1 signaling pathway		Li et al., 2021
18	Puerarin	A	increased SIRT-1 expression, reducing excessive production of ROS and inhibiting the expression of inflammatory factors and oxidative stress injury		Chang et al., 2021
19	Puerarin	A	inhibition of the p38 MAPK and JNK signaling		Hu et al., 2020
20	Quercetin	B2		enhancement of autophagy and upregulation of P21 and P53 expression	Cao et al., 2019
21	Quercetin	C	block the expression of lectin-like oxidized LDL receptor-1 (LOX-1) in cultured macrophages	decrease of multiple inflammatory cytokines in transcript level	Xue et al., 2017
22	Scutellarin	A,B3	In H2O2 injured-HUVECs the deleterious alterations in ROS levels and		Mo et al., 2018
23	Total flavone	A,B2		dual suppression of miR-33 and NFκB pathway	Ma et al., 2020
24	total flavonoids	B2			Bo et al., 2017
25	total flavonoids of Engelhardia roxburghiana	A,B2		inhibiting AKT and mTOR phosphorylation	Wei et al., 2021
26	Vitexin	A	up-regulation of Wnt/β-catenin and Nrf2 signalling pathway		Zhang et al., 2022
27	Flavonol	B2	increased the collagen content of plaque lesions and decreased the expression of CD44.	significantly reduced the area of aortic atherosclerotic lesions	Phie J et al., . 2017

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TABLE 3 | Mechanisms of Glycosides

No.	components and herbs	Level	Mechanism on oxidative stress	Mechanism on inflammation	reference
1	2,3,5,4'-Tetrahydroxy-stilbene-2-O-β-D-glucoside	B2		down-regulation of IL-6, TNF-α, VCAM-1 and	Li et al., 2019
2	amygdalin	A,B2		MAPKs, AP-1 and NF-κB p65 signaling pathways	Wang et al., 2020

3	polysaccharide CM1	B2	Integrated bioinformatics analysis revealed that CM1 interacted with multiple		Lin et al., 2021
4	Crocin	A,B1		promoting M2 macrophage polarization and maybe by inhibiting NF-κB p65	Li et al., 2018
5	Dendrobium huoshanense C. Z. Tang et S. J. Cheng polysaccharide	A,B (Zebrafish)	improved HCD-induced lipid deposition, oxidative stress, and inflammatory response, mainly showing that DHP significantly increased superoxide dismutase (SOD) activity, decreased plaque formation,		Fan et al., 2020
6	Gastrodin	B2		attenuate the lipid deposition and foam cells on the inner membrane	Liu et al., 2021
7	Poria cocos polysaccharides	A,B2		reducing inflammatory factors and blood lipid levels	Li et al., 2021
8	cordycepin	A		PI3K/Akt/eNOS signaling pathway	Ku et al., 2021
9	Polydatin	A,B2		down-regulation of PBEF and inhibition of PBEF-inducing cholesterol deposits in macrophages	Huang et al., 2018
10	Pseudoprotodioscin	A,B2		regulated adhesion molecule expression in HUVECs through an	Sun et al., 2020

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TABLE 4 | Mechanisms of Phenylpropanoids

No.	components and herbs	Level	Mechanism on oxidative stress	Mechanism on inflammation	reference
1	5,2'-dibromo-2,4',5'-trihydroxydiphenylmethanone	A	activates HMBOX1, which is an inducible protective mechanism that inhibits	activates HMBOX1, which is an inducible protective mechanism that inhibits LPS-induced	Yuan et al., 2019
2	Benzoinum	A		regulation of the NF-κB and caspase-9 signaling pathways	Zhang et al., 2019

3	Bergaptol	A		inhibitory effects on c-Jun N-terminal kinase (JNK), P38, P65, IκBα and IκKα/β phosphorylation,	Shen et al., 2020
4	Cinnamaldehyde	B2		the IκB/NF-κB signaling pathway.	Li et al., 2019
5	Curcumin	A	AMPK/mTOR/p70S6K pathway		Zhao et al., 2021
6	Curcumin	A		interfering with the reactive oxygen species-ERK1/2 signal pathway.	Zhang et al., 2020
7	Curcumin	B2		related to LCN2 down-regulation, anti-hyperlipidemia effect as well as the inhibition of inflammation	Wan et al., 2016
8	curcumin, Nicotinic-curcumin	A		reduced endothelial EVs secretion	Xiang et al., 2021
9	Epigallocatechin gallate	A	enhancing SIRT1/AMPK as well as Akt/eNOS signaling pathways		Pai et al., 2021
10	Honokiol	B2	decreased reactive oxygen species level and enhanced superoxide dismutase activity.	downregulated the expression of pro-inflammatory markers, like tumor necrosis factor-α, interleukin	Liu et al., 2020
11	Imperatorin	A,B2		Matrix metalloproteinase-2 (MMP-2) expression in aorta was down-regulated by IMP. IMP could inhibit the phosphorylation of MAPKs pathway in the aorta and VSMCs, resulting in a significant decrease in the contents of p-ERK 1/2, p-JNK and p-P38.	Li et al., 2021
12	Paeonol	A,B2		inhibited the downstream NLRP3 inflammasome pathway by increasing the level of miR-223 in plasma derived exosomes of hyperlipidemic rats	Shi et al., 2020
13	paeonol	A,B1		up-regulating the expression of caveolin-1 and inhibiting the activation of NF-κB pathway	Liu et al., 2020
14	Paeonol	A,B2		increase the expression of miR-223 in THP-1 derived exosomes and in HUVECs after uptake of exosomes, whereas decrease the expression of STAT3, p-STAT3 in HUVECs.	Liu et al., 2018

15	Paeonol	B3		promotes miR-126 expression to inhibit monocyte adhesion to ox-LDL-injured VECs and block	Yuan et al., 2016
16	phthalides	B2		suppressing the expression of AP-1 and AKT/NF-κB signaling pathway	Lei et al., 2019
17	Pterostilbene	A,B1	regulation of the Nrf2-mediated AMPK/STAT3 pathway		Tang et al., 2020
18	Punicalagin, pomegranate peel polyphenols	A,B2		inhibiting force-specific activation of Smad1/5 in ECs	Anwaier et al., 2021
19	Resveratrol	A,B2	downregulating the PI3K/AKT/mTOR signaling pathway		Ji et al., 2022
20	Resveratrol	B3		down-regulation phosphorylation of NF-κB, and MAPKs signaling	Song et al., 2013
21	Salvianic acid A	A,B2	increasing antioxidant enzymes activity, upregulating	inhibiting the toll-like receptor 4/nuclear factor kappa B pathway	Song et al., 2019
22	Salvianolic acid A	B1		decreased serum hs-CRP levels and suppressed the activation of NLRP3 inflammasome and NF-κB	Ma et al., 2020
23	Salvianolic acid B	A,B2		MAPKs/NF-κB signaling pathways	Zhang et al., 2022

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TABLE 5 | Mechanisms of quinones

No.	components and herbs	Level	Mechanism on oxidative stress	Mechanism on inflammation	reference
1	Dihydrotanshinone I	A,B2		suppressing RIP3-mediated necroptosis of macrophage	Zhao et al., 2021
2	Dihydrotanshinone I	A,B2	inhibition of LOX-1 mediated by NOX4/NF-κB signaling pathways		Zhao et al., 2016
3	Shikonin	A,B1		inhibition of SKN on CD4+ T cell inflammatory activation	Lü et al., 2020
4	Tanshinone II A	B2		interfering with RAGE and NF-κB activation, and downregulation of downstream inflammatory factors, including ICAM-1, VCAM-1, and MMP-2, -3 and -9	Zhao et al., 2016

5	Tanshinone IIA	A	TSA represses ferroptosis via activation of NRF2 in HCAECs.		He et al., 2021
6	Tanshinone IIA	A		mediating miR-130b and WNT5A	Yuan et al., 2020
7	Tanshinone IIA	A,B2		activate KLF4 and enhance autophagy as well as M2 polarization of macrophages by inhibiting miR-375 to Attenuate Atherosclerosis	Chen et al., 2019
8	Tanshinone IIA Sodium sulfonate	A,B2	The anti-oxidant, and anti-inflammation properties of STS in preventing AS is mediated by its inhibition of CLIC1 expression and membrane translocation.		Zhu et al., 2017

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