

Effect on CYPs and prostaglandin activity

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Author	Test System	Exposure	Characterisation of test substance	Main outcome measure	Outcome
Dugasani <i>et al.</i> , 2010	Mouse leukaemic monocyte (RAW 264.7) macrophages and human polymorphonuclear neutrophils (PMN).	1, 3 and 6 uM.	[6]-gingerol, [8]-gingerol, [10]-gingerol and [6]-shogaol.	compare the antioxidant and antiinflammatory activities of gingerols and their natural analogues to determine their structure-activity relationship and molecular mechanisms.	Dose dependant inhibition of activated PGE2 release. Inhibition reached 56, 66, 73 and 87%, respectively at 6uM.

Jolad et al., 2004	HL-60 cells.	Not specified.	ginger constituents: gingerols, shogaols, 3-dihydroshogaols, gingerdiols.	Effects of ginger components on LPS-induced PGE2 production.	No cytotoxicity demonstrated.
Jolad et al., 2005	HL-60 cells.	Not specified.	Ginger constituents containing gingerols, shogaols, 3-dihydroshogaols, gingerdiols.	Effects of ginger components on LPS-induced PGE2 production.	Inhibition of LPS-stimulated PGE2 production (IC50 = 0.008 ug/ml with Ginger fractions).
Kim et al., 2012	Human liver microsomes.	0.05–5 ug/ml.	Aqueous ethanolic ginger extract (30% EtOH).	Inhibitory effect on CYP450-mediated drug metabolism.	Concentration dependent inhibitory effects on CYP2C19; IC50 value 3.8 g/ml.
Kimura et al., 2010;	Human CYP3A4 and CYP2C9 microsomes.	Not specified.	NA	Inhibitory effect on CYP3A4 and CYP2C9 activity.	significant inhibition of CYP3A4 IC50 5.1u g/ml CYP2C9 IC50 (10ug/ml) activity.

Lantz et al., 2007	U937 cells	0.1 ug/ml for 6 hrs.	Ginger extract and mixtures of 6-, 8- 10-gingerols and 6-, 8-, 10-shogaols.	Effect on inflammatory mediator production.	No effect on COX-2 expression
					Inhibition of CYP1A2 (IC ₅₀ = 221.5 mg/ml) by ginger extract. No effect on CYP2A6; maximum inhibition of CYP2B6: IC ₅₀ = 22 mg/ml, IC ₅₀ = 122 mg/mL against CYP2C8 in the presence of amodiaquine, IC ₅₀ = 93.5 mg/mL against CYP2C9, in the presence of diclofenac. Inhibition of CYP3A in the presence of testosterone, no effect in the presence of midazolam
Mukkavilli et al., 2014	Human liver microsomes.	Ginger extract: 500 mg/ml (containing 15 mg/ml 6G, 3.4 mg/ml 8G, 3.9 mg/ml 10G, 3.0 mg/ml 6S); All individual components of gingerols assessed at 100 mg/mL (equivalent to 29 mg/ml 6G, 32 mg/ml 8G, 35 mg/ml 10G and 28 mg/ml of 6S).	Ginger extract: (containing 6-Gingerol, 8-Gingerol, 10-Gingerol, 6-Shogaol). All individual components of gingerols were assessed at 100 mg/mL (equivalent to 29 mg/mL 6G, 32 mg/mL 8G, 35 mg/mL 10G and 28 mg/mL of 6S).	effect of ginger extract and major constituents on CYP P450 enzyme activity.	