

ตารางที่ 1.1 องค์ประกอบทางเคมีที่มีรายงานในมะขามป้อม

Class	Compound	Plant part	Reference
Alkaloid	phyllantine	leaves, fruit,	Khanna and Bansal, 1975
	phyllantidine	tissue cultures	
	zeatin	leaves, fruit	Ram and Rao, 1976
	zeatin nucleotide		
	zeatin riboside		
Benzanoid	chebulic acid	leaves	Theresa <i>et al.</i> , 1965; 1967
	chebulinic acid	leaves, fruit	Theresa <i>et al.</i> , 1965; 1967; Zhang <i>et al.</i> , 2003
	chebulagic acid	leaves, fruit	Theresa <i>et al.</i> , 1965; 1967; Zhang <i>et al.</i> , 2004
	chebulanin	fruit	Zhang <i>et al.</i> , 2001(a)
	gallic acid	leaves, fruit	Basa and Srinivasulu, 1987; Zhang <i>et al.</i> , 2003; Kumaran and Karunakaran, 2006; THP,2007
	ellagic acid	leaves, fruit	Subramanian <i>et al.</i> , 1971; Desai <i>et al.</i> , 1977, Zhang <i>et al.</i> , 2003
	amlaic acid	fruit	Theresa <i>et al.</i> , 1967
	ethyl gallate	fruit	Ghosal <i>et al.</i> , 1996; Khopde <i>et al.</i> , 2001; Zhang <i>et al.</i> , 2003

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Class	Compound	Plant part	Reference
Benzanoid	gallo-ellagitannoid	fruit	Ghosal <i>et al.</i> , 1996
	1- <i>O</i> -galloyl- β -D-glucose	fruit	El-Mekkawy <i>et al.</i> , 1995; Zhang <i>et al.</i> , 2004
	1-di- <i>O</i> -galloyl- β -D-glucose	fruit	Ghosal <i>et al.</i> , 1996; Khopde <i>et al.</i> , 2001
	1,6-di- <i>O</i> -galloyl- β -D-glucose	fruit	El-Mekkawy <i>et al.</i> , 1995; Zhang <i>et al.</i> , 2003
	3-6-di- <i>O</i> -galloyl- β -D-glucose	fruit	Zhang <i>et al.</i> , 2003
	1- β -2,3,6-tetra-galloyl-glucose	fruit	Zhang <i>et al.</i> , 2001(a)
	emblicol	fruit	Pillay and Iyer, 1958
	putranjivain A	fruit	El-Mekkawy <i>et al.</i> , 1995
	mucic (galactaric) acid	fruit	THP, 2007
Diterpene	gibberellin A-1 gibberellin A-3 gibberellin A-4 gibberellin A-7 gibberellin A-9	leaves	Ram and Rao, 1978

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Class	Compound	Plant part	Reference
Flavonoid	leucodelphinidin	leaves	Laumas and Seshardi, 1958
	kaempferol kaempferol-3-glucoside	leaves	Subramanian <i>et al.</i> , 1971
	rutin	fruit	Bhattacharya <i>et al.</i> , 2002; THP, 2007
	quercetin	fruit	Zhang <i>et al.</i> , 2003
	kaempferol-3- <i>O</i> - β -D-glucoside quercetin-3- <i>O</i> - β -D-glucoside	fruit	El-Mekkawy <i>et al.</i> , 1995
Furanolactone	ascorbic acid	leaves, fruit	Basa and Srinivasulu, 1987; Khopde <i>et al.</i> , 2001; Scartezzini <i>et al.</i> , 2006; THP, 2007
Phenolic compounds	L-malic acid-2- <i>O</i> -gallate mucic acid 1,4-lactone methyl ester-2- <i>O</i> -gallate mucic acid 1,4-lactone 2- <i>O</i> -gallate mucic acid 1,4-lactone-D-saccharic acid	fruit	Zhang <i>et al.</i> , 2001

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Class	Compound	Plant part	Reference
Phenolic compounds	mucic acid 1,4-lactone 3,5-di- <i>O</i> -gallate	fruit	Zhang <i>et al.</i> , 2001
	mucic acid 1,4-lactone 3- <i>O</i> -gallate		
	mucic acid 1,4-lactone 5- <i>O</i> -gallate		
	mucic acid 1,4-lactone methyl ester 5- <i>O</i> -galla		
	mucic acid 1-methyl ester 2- <i>O</i> -gallate		
	mucic acid 6-methyl ester 2- <i>O</i> -gallate		
	mucic acid dimethyl ester 2- <i>O</i> -gallate		
	mucic acid 2- <i>O</i> -gallate		
	2-carboxymethylphenol 1- <i>O</i> - β -D-glucopyranoside	roots	Zhang <i>et al.</i> , 2001(b)
	2,6-dimethoxy-4-(2-hydroxyethyl)phenol 1- <i>O</i> - β -D-glucopyranoside		
Sesquiterpenoids	phyllemblic acid	roots	Zhang <i>et al.</i> , 2001(b);
	phyllaemblicins A-C		Zhang <i>et al.</i> , 2004
	phyllaemblicin D	roots	Zhang <i>et al.</i> , 2000
	phyllaemblic acid B,C		
Sterol	β -sitosterol	leaves	Hui and Sung, 1968

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Class	Compound	Plant part	Reference
Tannins	corilagin Elaeocarpusin	fruit	Zhang <i>et al.</i> , 2004; Kumaran and Karunakaran, 2006
	geraniin	leaves, branches	Zhang <i>et al.</i> , 2004
	phyllanemblinins A phyllanemblinins B-F	fruit, leaves, branches	Zhang <i>et al.</i> , 2001(a)
	emblicanin A, B pedunculagin punigluconin	fruit	Ghosal <i>et al.</i> , 1996; Bhattacharya <i>et al.</i> , 2002
Triterpene	lupeol	leaves, fruit	Hui and Sung, 1968; Desai <i>et al.</i> , 1977

ตารางที่ 1.2ฤทธิ์ทางเภสัชวิทยาของมะขามป้อม

Pharmacological properties	Plant part	References
Antioxidant activity, <i>in vitro</i>	fruit	Khopde <i>et al.</i> , 2001; Scartezzini <i>et al.</i> , 2006; Kumar <i>et al.</i> , 2006
Antimicrobial activity, <i>in vitro</i>	fruit	Sankaranarayanan and Jolly, 1993; Ahmad <i>et al.</i> , 1998
Anti-inflammatory activity, <i>in vitro</i> and <i>in vivo</i>	leaves	Asmawi <i>et al.</i> , 1992; Ihantola-Vormisto <i>et al.</i> , 1997
Anti-cancer activity, <i>in vivo</i> and <i>in vitro</i>	fruit	Jeena <i>et al.</i> , 1999; Nandi <i>et al.</i> , 1997
Anti-HIV activity, <i>in vitro</i>	fruit	El-Mekkawy <i>et al.</i> , 1995; Kusumoto <i>et al.</i> , 1995
Antiulcerogenic activity, <i>in vivo</i>	fruit	Sairam <i>et al.</i> , 2002
Antipyretic activity, <i>in vivo</i>	fruit	Perianayagam <i>et al.</i> , 2004

ตารางที่ 1.2ฤทธิ์ทางเภสัชวิทยาของมะขามป้อม (ต่อ)

Pharmacological properties	Plant part	References
Enhancer of natural killer cell (NK) activity, <i>in vitro</i>	fruit	Suresh and Vasudevan, 1994
Antiproliferative activity, <i>in vitro</i>	fruit, branches, leaves, roots	Khan <i>et al.</i> , 2002; Zhang <i>et al.</i> , 2004
Antimutagenicity, <i>in vitro</i>	fruit	Banu <i>et al.</i> , 2004; Arora <i>et al.</i> , 2003
Hepatoprotective activity, <i>in vitro</i>	fruit	Jeena and Kuttan, 2000; Tasduq <i>et al.</i> , 2005; Pramyothin <i>et al.</i> , 2006
Hypolipidaemic, <i>in vivo</i> and <i>in vitro</i>	fruit	Jacob <i>et al.</i> , 1988; Mathur <i>et al.</i> , 1996; Anila and Vijayalakshmi, 2002 Yadav, 1987
Protection against radiation-induced chromosome damage, <i>in vitro</i>	fruit	