

表 1 金银花萜类生物合成途径 MVA、MEP 以及分支点相关基因

Table 1 The list of genes related to the MVA pathway, MEP pathway and Branch points in *Lonicera japonica*

途径	酶	基因 ID	基因名称	相似度(%)	基因定位	正负链	大小(aa)	分子量(kD)	pI	SL ^a
Pathway	Enzyme	Gene ID	Gene name	Identity(%)	Genomics position	Strand	Size (aa)	Mw (kD)		
MVA	AACT	GWHTAAZE002500	LjAACT2a	84.38	chr1: 79844195..79849592	+	408	41.98	6.46	Pl
		GWHTAAZE027061	LjAACT2b	83.12	chr8: 13666955..13673717	+	393	40.29	5.83	Mt
		GWHTAAZE009619	LjAACT2c	38.98	chr2: 113406153..113414969	-	710	75.12	8.59	C
		GWHTAAZE021804	LjAACT2d	37.47	chr6: 61286129..61291604	+	460	48.67	7.94	C
		GWHTAAZE011355	LjAACT2e	36.94	chr3: 58128111..58135693	+	430	45.38	6.89	Mt
	HMGS	GWHTAAZE027665	LjHMGSa	78.20	chr8: 24038874..24045923	+	478	53.05	6.29	C
		GWHTAAZE006141	LjHMGSb	70.20	chr2: 19822865..19827054	+	360	40.27	8.93	ER
	HMGR	GWHTAAZE016726	LjHMGR1a	72.56	chr4: 81260092..81264036	+	567	60.53	7.11	Mt
		GWHTAAZE007709	LjHMGR1b	70.52	chr2: 50597338..50602671	+	600	64.81	7.15	C
		GWHTAAZE015080	LjHMGR1c	68.98	chr4: 24308670..24314824	+	594	63.48	7.47	C
		GWHTAAZE030313	LjHMGR2a	69.98	chr9: 40927574..40929776	+	574	61.63	8.15	Mt
		GWHTAAZE018265	LjHMGR2b	69.35	chr5: 17026564..17028545	-	579	61.78	7.52	C
	MK	GWHTAAZE029055	LjMKa	64.14	chr9: 2489245..2496061	-	382	40.32	5.86	ER
		GWHTAAZE029062	LjMKb	64.14	chr9: 2657918..2664759	-	382	40.32	5.86	ER
	PMK	GWHTAAZE027958	LjPMK	66.27	chr8: 31901057..31910887	-	471	50.93	5.14	ER
	MPDC	GWHTAAZE012878	LjMPDC2	78.66	chr3: 92804219..92809103	+	419	46.27	6.45	C
MEP	DXS	GWHTAAZE012158	LjDXSa	82.01	chr3: 80847698..80851384	+	531	56.35	6.11	Mt
		GWHTAAZE012155	LjDXSb	73.95	chr3: 80809599..80815846	+	699	75.28	6.54	Mt
		GWHTAAZE032281	LjDXSc	72.74	chr9: 73574678..73581343	+	650	70.21	6.43	C
		GWHTAAZE032053	LjDXSd	72.13	chr9: 69000277..69006261	+	698	75.73	7.33	ER
		GWHTAAZE007800	LjDXSe	71.10	chr2: 52716152..52721248	+	715	76.51	7.64	C
		GWHTAAZE015184	LjDXSf	70.75	chr4: 26783971..26789317	+	632	68.07	6.63	C
		GWHTAAZE026036	LjDXL2	68.57	chr7: 71664598..71675256	+	715	78.22	5.95	C
	DXR	GWHTAAZE017934	LjDXRa	84.40	chr5: 12440456..12444805	+	475	51.48	5.70	C
		GWHTAAZE030566	LjDXRb	77.22	chr9: 44907627..44914291	-	518	56.47	6.68	Mt
	MCT	GWHTAAZE019039	LjMCTa	67.63	chr5: 29251082..29254161	-	177	19.32	4.88	C
		GWHTAAZE019036	LjMCTb	63.74	chr5: 29239954..29242158	-	180	20.16	5.17	ER
	CMK	GWHTAAZE008562	LjCMK	78.74	chr2: 82548667..82554921	-	406	44.40	6.14	PER
	MDS	GWHTAAZE006022	LjMDS	87.86	chr2: 17879210..17883386	+	240	25.65	8.99	C
	HDS	GWHTAAZE009127	LjHDSa	84.28	chr2: 102935494..102942969	-	742	82.35	5.73	C
		GWHTAAZE009126	LjHDSb	81.93	chr2: 102921075..102927550	-	708	78.21	6.32	PER
	HDR	GWHTAAZE018505	LjHDR	74.46	chr5: 20179010..20183072	-	434	49.05	5.71	Mt
Branch points	IPPI	GWHTAAZE001676	LjIPPI1	89.04	chr1: 57417919..57423649	-	233	26.95	5.15	C
	GPPS	GWHTAAZE032182	LjGPPSa	75.23	chr9: 71458838..71468121	+	359	39.38	5.23	C
		GWHTAAZE024615	LjGPPSb	74.84	chr7: 45547539..45556430	+	373	40.73	5.44	C
		GWHTAAZE027114	LjGPPSc	39.73	chr8: 14453628..14456475	-	423	46.43	5.33	C
		GWHTAAZE002581	LjGPPSd	39.06	chr1: 82152169..82155508	-	418	45.78	5.41	C
		GWHTAAZE002582	LjGPPSe	35.65	chr1: 82175840..82177429	-	245	27.13	5.00	C
	FPPS	GWHTAAZE027382	LjFPPS1a	81.42	chr8: 18059660..18062213	+	295	34.23	5.66	C
		GWHTAAZE002977	LjFPPS1b	77.71	chr1: 89433418..89438661	+	342	39.70	5.46	C
	GGPPS	GWHTAAZE007415	LjGGPPS5a	72.20	chr2: 44737931..44739157	-	288	30.79	5.42	C
		GWHTAAZE025285	LjGGPPS5b	63.97	chr7: 58165196..58167517	+	371	40.69	6.52	ER
		GWHTAAZE004136	LjGGPPS5c	53.03	chr1: 111809347..111810367	+	207	22.91	8.52	C
		GWHTAAZE004149	LjGGPPS5d	47.26	chr1: 112126519..112127620	+	248	27.54	8.76	ER
		GWHTAAZE014025	LjGGPPS11a	75.88	chr4: 4341931..4343352	+	374	40.52	5.95	C
		GWHTAAZE015174	LjGGPPS11b	72.11	chr4: 26453364..26453957	+	197	21.32	6.35	C
		GWHTAAZE030258	LjGGPPS12a	69.54	chr9: 40203142..40208954	-	335	37.14	5.79	ER
		GWHTAAZE018311	LjGGPPS12b	67.35	chr5: 17489666..17495590	+	334	36.69	5.39	ER

a 注: C, cytosol; 细胞基质; ER, endoplasmic reticulum; 内质网; Mt, mitochondrion; 线粒体; Pl, plastid; 质体

aNote: C, cytosol; ER, endoplasmic reticulum; Mt, mitochondrion; Pl, plastid