

Supplementary Materials to:
Illumination on “reserving phloem and discarding xylem” and quality evaluation of *Radix polygalae* by determining oligosaccharide esters, saponins and xanthones

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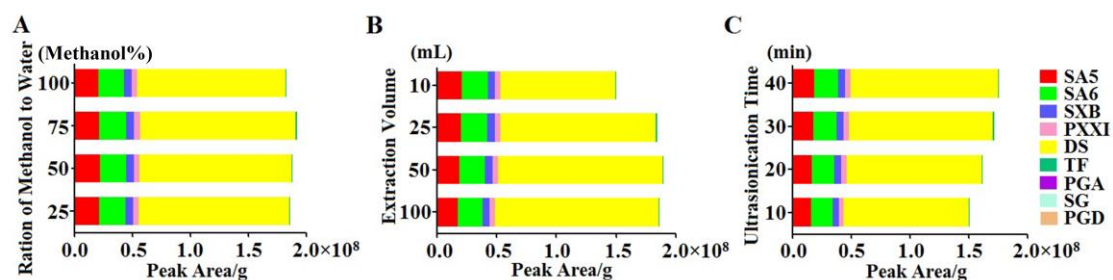


Figure S1. The influence factors, the extracting solvent (A), extracting time (B) and extracting volume (C), on the extracting efficiency of nine targeted compounds from RP.

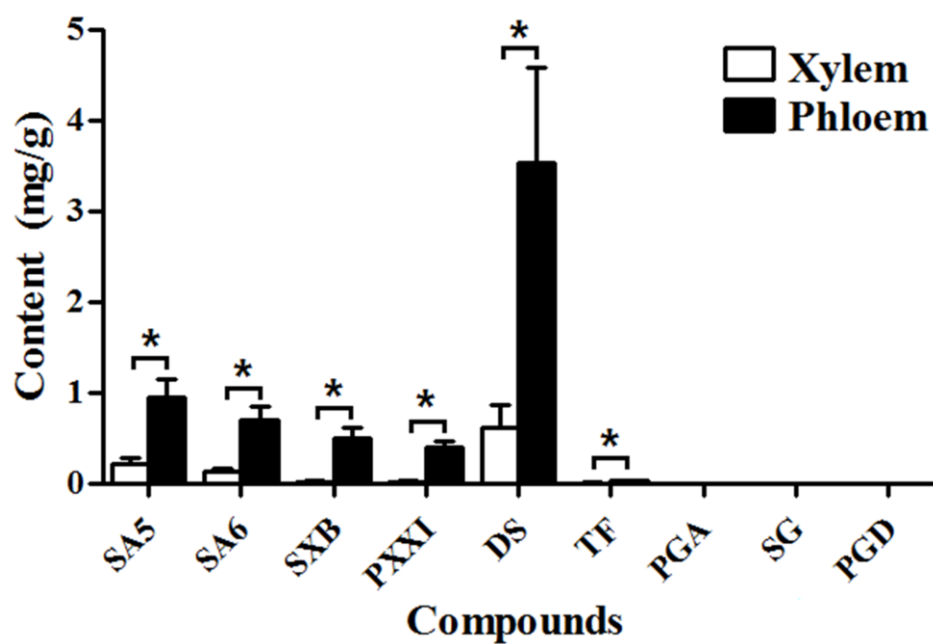


Figure S2. The standardized content of bioactive compounds in RP's xylem and phloem (*, $P < 0.001$)

Table S1. Contents of 9 analytes in RP samples (mean $\pm$ SD, $\mu\text{g/g}$)

Sample	SA5	SA6	SXB	PXXI	DS	TF	PGA	SG	PGD
HZ-1	772.9 $\pm$ 10.1	618.6 $\pm$ 13.5	679.8 $\pm$ 15.1	497.4 $\pm$ 11.9	3248.8 $\pm$ 20.5	20.5 $\pm$ 0.8	–	–	–
HZ-2	776.8 $\pm$ 6.9	678.6 $\pm$ 22.5	718.1 $\pm$ 13.5	491.0 $\pm$ 18.7	3526.9 $\pm$ 129.9	22.3 $\pm$ 0.8	–	–	–
HZ-3	845.3 $\pm$ 28.9	482.6 $\pm$ 5.8	666.4 $\pm$ 5.3	491.2 $\pm$ 15.9	1597.9 $\pm$ 65.8	51.5 $\pm$ 2.0	–	–	–
HZ-4	1837.1 $\pm$ 57.8	980.5 $\pm$ 2.6	1095.8 $\pm$ 10.6	924.8 $\pm$ 40.1	3858.9 $\pm$ 91.9	19.7 $\pm$ 1.3	–	–	–
HZ-5	770.1 $\pm$ 11.9	489.0 $\pm$ 16.3	817.8 $\pm$ 14.6	578.5 $\pm$ 8.9	1420.9 $\pm$ 56.6	28.1 $\pm$ 1.4	–	–	–
HZ-6	2268.4 $\pm$ 21.1	1121.8 $\pm$ 5.7	1100.9 $\pm$ 10.5	987.0 $\pm$ 24.7	3524.3 $\pm$ 60.8	21.9 $\pm$ 0.7	–	–	–
HZ-7	1401.5 $\pm$ 19.4	1082.2 $\pm$ 15.6	791.4 $\pm$ 13.2	550.1 $\pm$ 16.7	4526.2 $\pm$ 89.4	26.2 $\pm$ 1.1	–	–	–
HZ-8	871.4 $\pm$ 25.1	589.3 $\pm$ 29.5	809.2 $\pm$ 8.5	567.2 $\pm$ 5.2	2026.1 $\pm$ 93.2	27.8 $\pm$ 0.9	–	–	–
HZ-9	767.6 $\pm$ 14.4	672.5 $\pm$ 1.8	812.7 $\pm$ 31.4	595.8 $\pm$ 12.8	2864.4 $\pm$ 108.1	31.2 $\pm$ 0.1	–	–	–
HZ-10	1029.0 $\pm$ 10.1	734.7 $\pm$ 7.1	754.7 $\pm$ 3.5	585.7 $\pm$ 20.0	3081.4 $\pm$ 72.7	49.6 $\pm$ 2.1	–	–	–
HZ-11	1047.8 $\pm$ 34.2	826.7 $\pm$ 30.1	831.6 $\pm$ 2.8	602.3 $\pm$ 15.4	4131.1 $\pm$ 150.2	18.8 $\pm$ 1.3	–	–	–
HZ-12	3069.0 $\pm$ 26.5	1074.6 $\pm$ 2.9	1007.5 $\pm$ 4.3	1127.5 $\pm$ 16.0	6118.7 $\pm$ 37.6	20.9 $\pm$ 1.2	–	–	–
HZ-13	820.7 $\pm$ 11.2	540.2 $\pm$ 6.3	887.2 $\pm$ 18.3	587.3 $\pm$ 22.1	2275.8 $\pm$ 42.6	33.1 $\pm$ 0.7	–	–	–
HZ-14	1086.3 $\pm$ 36.3	723.6 $\pm$ 18.8	930.3 $\pm$ 15.2	696.7 $\pm$ 24.5	3363.0 $\pm$ 108.8	21.9 $\pm$ 0.5	–	–	–
HZ-15	1037.3 $\pm$ 36.8	827.7 $\pm$ 14.5	671.0 $\pm$ 20.2	547.9 $\pm$ 23.2	5830.6 $\pm$ 42.8	19.3 $\pm$ 1.2	–	–	–
HZ-16	873.0 $\pm$ 41.1	667.5 $\pm$ 28.4	751.5 $\pm$ 33.7	592.6 $\pm$ 28.9	4352.4 $\pm$ 163.6	16.6 $\pm$ 9.0	–	–	–
YZ-1	2091.4 $\pm$ 80.4	1506.4 $\pm$ 21.7	1233.5 $\pm$ 35.6	1003.2 $\pm$ 33.1	8692.0 $\pm$ 95.7	39.5 $\pm$ 1.2	–	–	–
YZ-2	1482.3 $\pm$ 15.7	885.6 $\pm$ 18.3	798.4 $\pm$ 15.0	575.1 $\pm$ 20.4	4339.1 $\pm$ 76.0	25.6 $\pm$ 1.0	–	–	–
YZ-3	1691.4 $\pm$ 20.6	1282.1 $\pm$ 43.6	791.3 $\pm$ 25.0	554.7 $\pm$ 13.5	7594.3 $\pm$ 344.0	24.2 $\pm$ 1.1	–	–	–
YZ-4	714.8 $\pm$ 20.3	476.5 $\pm$ 5.1	686.6 $\pm$ 14.7	449.6 $\pm$ 7.7	2097.9 $\pm$ 72.5	33.2 $\pm$ 0.8	–	–	–
YZ-5	763.0 $\pm$ 15.6	766.8 $\pm$ 19.4	818.7 $\pm$ 12.7	533.5 $\pm$ 22.0	4192.3 $\pm$ 76.9	44.1 $\pm$ 2.0	–	–	–
YZ-6	1606.7 $\pm$ 69.2	1142.6 $\pm$ 26.0	773.5 $\pm$ 24.0	577.7 $\pm$ 20.8	6343.7 $\pm$ 198.4	31.9 $\pm$ 1.3	–	–	–
YZ-7	890.2 $\pm$ 15.1	615.7 $\pm$ 25.2	924.5 $\pm$ 31.4	583.2 $\pm$ 20.9	1854.5 $\pm$ 17.3	19.5 $\pm$ 0.8	–	–	–

Table S1 continued

ZS-1	654.5±8.2	501.6±15.9	695.8±26.5	529.4±21.5	2337.2±29.9	37.4±0.6	–	–	–
ZS-2	880.0±13.0	517.2±18.8	781.2±9.9	537.0±11.4	2027.3±52.4	32.7±1.0	–	–	–
ZS-3	464.2±8.7	285.1±6.6	783.3±18.6	608.1±23.6	909.2±28.3	49.7±1.4	–	–	–
ZS-4	710.4±5.8	509.7±14.4	745.9±14.4	557.7±15.2	2413.9±65.6	39.0±1.4	–	–	–
ZS-5	820.7±18.2	607.6±18.1	706.8±20.1	474.9±19.6	2158.7±23.2	25.0±1.3	–	–	–
ZS-6	1217.9±30.5	704.4±3.8	791.8±23.6	595.1±29.5	3027.2±66.7	25.0±0.2	–	–	–
ZS-7	1130.6±45.2	831.4±32.6	940.5±14.0	653.4±13.8	3716.5±54.5	37.8±6.0	–	–	–
GZ-1	1542.3±8.1	1049.6±24.0	788.2±13.5	562.5±8.4	5710.9±117.2	20.3±1.1	–	–	–
GZ-2	488.8±10.2	306.4±1.7	555.0±14.6	401.8±12.4	328.1±9.2	69.5±3.4	–	–	–
GZ-3	1871.2±44.5	1145.9±27.7	827.8±13.1	616.2±21.6	5891.3±154.4	13.9±0.7	–	–	–
GZ-4	310.5±6.4	112.1±1.4	816.5±7.8	589.9±30.7	–	65.1±3.3	–	–	–
GZ-5	1731.4±11.2	1042.4±21.3	838.9±20.4	669.6±20.6	4417.6±112.3	24.6±1.5	–	–	–
GZ-6	279.3±5.4	143.4±7.0	635.8±6.9	462.5±12.4	–	60.1±1.3	–	–	–
GZ-7	487.7±3.3	361.2±4.7	697.6±23.8	484.2±9.6	115.1±9.0	54.5±2.5	–	–	–
GZ-8	1548.6±29.4	1016.0±16.1	885.2±20.2	668.9±13.6	5124.4±109.1	25.4±1.6	–	–	–
BZ-1	1498.6±9.4	1009.6±14.0	720.8±27.1	656.5±17.5	5062.1±103.2	31.5±1.1	–	–	–
BZ-2	1279.0±11.3	968.2±45.4	480.2±19.9	448.7±20.5	4858.7±219.3	29.1±0.7	–	–	–
BZ-3	1307.6±44.9	1033.2±41.6	598.8±12.4	448.2±14.7	4683.0±165.8	52.7±2.4	–	–	–
BZ-4	1638.9±18.6	1226.1±33.7	617.5±11.4	465.6±14.4	6310.0±137.5	16.1±0.6	–	–	–
BZ-5	1108.9±36.8	765.0±23.8	564.6±15.9	423.8±8.8	2520.8±98.3	28.3±1.4	–	–	–
BZ-6	938.8±6.7	525.6±20.2	518.3±8.3	413.4±8.2	2478.5±66.1	56.5±2.5	–	–	–
BZ-7	1390.2±13.2	1007.3±16.9	632.1±9.9	471.9±8.9	5785.2±145.0	23.0±1.4	–	–	–

‘–’, Undetected

Table S2. The information of RP samples used in this study

Batch No.	Sample	Product	Diameter (mm)	Chinese herbal medicine market	Origin
1	HZ-1	Crude (phloem)	3.1±0.2	Heze (Shandong, China)	Shandong
2	HZ-2	Crude (phloem)	3.8±0.2	Heze (Shandong, China)	Shanxi
3	HZ-3	Crude (phloem)	4.1±0.2	Heze (Shandong, China)	Shanxi
4	HZ-4	Crude (phloem)	3.0±0.2	Heze (Shandong, China)	Shanxi
5	HZ-5	Crude (phloem)	3.2±0.2	Heze (Shandong, China)	Jilin
6	HZ-6	Crude (phloem)	4.5±0.2	Heze (Shandong, China)	Shanxi
7	HZ-7	Crude (phloem)	3.7±0.2	Heze (Shandong, China)	Shanxi
8	HZ-8	Crude (phloem)	2.2±0.2	Heze (Shandong, China)	Shandong
9	HZ-9	Crude (phloem)	2.9±0.2	Heze (Shandong, China)	Shanxi
10	HZ-10	Crude (phloem)	2.8±0.2	Heze (Shandong, China)	Shanxi
11	HZ-11	Crude (phloem)	3.5±0.2	Heze (Shandong, China)	Shanxi
12	HZ-12	Crude (phloem)	3.4±0.2	Heze (Shandong, China)	Shanxi
13	HZ-13	Crude (phloem)	2.8±0.2	Heze (Shandong, China)	Hebei
14	HZ-14	Crude (phloem)	3.2±0.2	Heze (Shandong, China)	Shanxi
15	HZ-15	Crude (xylem + phloem)	3.5±0.2	Heze (Shandong, China)	Gansu
16	HZ-16	Crude (xylem + phloem)	3.3±0.2	Heze (Shandong, China)	Shanxi
17	YZ-1	Crude (phloem)	2.5±0.2	Yuzhou (Henan, China)	-
18	YZ-2	Crude (phloem)	3.3±0.2	Yuzhou (Henan, China)	-
19	YZ-3	Crude (phloem)	3.4±0.2	Yuzhou (Henan, China)	-
20	YZ-4	Crude (phloem)	2.5±0.2	Yuzhou (Henan, China)	-
21	YZ-5	Crude (phloem)	4.0±0.2	Yuzhou (Henan, China)	-
22	YZ-6	Crude (phloem)	4.1±0.2	Yuzhou (Henan, China)	-

Table S2 continued

23	YZ-7	Crude (phloem)	1.8±0.2	Yuzhou (Henan, China)	-
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24	ZS-1	Crude (phloem)	2.9 ± 0.2	Zhangshu (Jiangxi, China)	-
25	ZS-2	Crude (phloem)	3.0 ± 0.2	Zhangshu (Jiangxi, China)	-
26	ZS-3	Crude (phloem)	2.8 ± 0.2	Zhangshu (Jiangxi, China)	-
27	ZS-4	Crude (phloem)	3.7 ± 0.2	Zhangshu (Jiangxi, China)	-
28	ZS-5	Crude (phloem)	2.3 ± 0.2	Zhangshu (Jiangxi, China)	Shanxi
29	ZS-6	Crude (phloem)	2.9 ± 0.2	Zhangshu (Jiangxi, China)	Shanxi
30	ZS-7	Licorice-processed (xylem + phloem)	3.4 ± 0.2	Zhangshu (Jiangxi, China)	Shanxi
31	GZ-1	Crude (phloem)	3.2 ± 0.2	Guangzhou (Guangdong, China)	Shanxi
32	GZ-2	Crude (phloem)	3.2 ± 0.2	Guangzhou (Guangdong, China)	Guizhou
33	GZ-3	Crude (phloem)	4.6 ± 0.2	Guangzhou (Guangdong, China)	Shanxi
34	GZ-4	Crude (phloem)	3.7 ± 0.2	Guangzhou (Guangdong, China)	Guizhou
35	GZ-5	Crude (phloem)	3.3 ± 0.2	Guangzhou (Guangdong, China)	Shanxi
36	GZ-6	Crude (phloem)	4.0 ± 0.2	Guangzhou (Guangdong, China)	-
37	GZ-7	Crude (phloem)	2.2 ± 0.2	Guangzhou (Guangdong, China)	-
38	GZ-8	Crude (phloem)	3.9 ± 0.2	Guangzhou (Guangdong, China)	Shanxi
39	BZ-1	Licorice-processed (xylem + phloem)	4.3 ± 0.2	Bozhou (Anhui, China)	Guizhou
40	BZ-2	Crude (xylem + phloem)	4.1 ± 0.2	Bozhou (Anhui, China)	Guizhou
41	BZ-3	Licorice-processed (xylem + phloem)	3.3 ± 0.2	Bozhou (Anhui, China)	Shanxi
42	BZ-4	Crude (xylem + phloem)	4.0 ± 0.2	Bozhou (Anhui, China)	Shanxi
43	BZ-5	Crude (xylem + phloem)	2.9 ± 0.2	Bozhou (Anhui, China)	Hubei
44	BZ-6	Licorice-processed (xylem + phloem)	3.2 ± 0.2	Bozhou (Anhui, China)	Shanxi
45	BZ-7	Crude (xylem + phloem)	3.5 ± 0.2	Bozhou (Anhui, China)	Shanxi

‘-’, Unknown