

**Table S1** The primers of genes used in RT-PCR

Name	Sequence
actin F	5'-TCCGTGACATCA AGGAAA AG-3'
actin R	5'-GATATCAACATCGCACTTCATG-3'
HMGR F	5'-CCGCGCCTTGTTGTACTGT-3'
HMGR R	5'-CTCCAGGATTACCGCTGCT-3'
GPS F	5'-CAGAGGAGCCCATTAAGAAAGAC-3'
GPS R	5'-GTGCGATGAGTCAAAGCATTTT-3'
FPS F	5'-GGAAGCTGAACCGTGGACTGTCA-3'
FPS R	5'-TCACCCATCATGAGCAATGCAC-3'
SQS F	5'-AATATGAGGAGAACTCCGTGAAAG-3'
SQS R	5'-GCCATGATCTGGGGAATAGC-3'
SE F	5'-AGCAGCAGTTGACAAAGG-3'
SE R	5'-GCCACATTCGTTTTGGTGAAGG-3'
$\beta$ -AS F	5'-TCACTTACGGTTCTTGGTTCGC-3'
$\beta$ -AS R	5'-TACTCCCGTGATTTCTGTTGG-3'
CYP88D6 F	5'-GACGCCTCATTACTTCCC-3'
CYP88D6 R	5'-CAACCGCCTTTCATCCAC-3'
CYP72A154 F	5'-AAGCACCGATGACGACTTAT-3'
CYP72A154 R	5'-TTATATTTCCACTTACGTAGTATGATGTGGGC-3'
C4H F	5'-AGCAGA AGGGAGAAATCAACGA-3'

C4H R	5'-TGTTTGCTAGCCACCAAGCAT-3'
CHI F	5'-CTCGCCGCTAAGTGGAAGG-3'
CHI R	5'-CCAAGACCGCCGCTGATACA-3'
NOS F	5'-CACCGGCAGAAGAGAGAAAGTG-3'
NOS R	5'-GCTGCCTGAGAAAGTGTAGGTG-3'
PR1 F	5'-ATGCCAACGCTCACAACCA-3'
PR1 R	5'-CACGGGACCTACGCCTACT-3'
PAL F	5'-GCCTAAACAAGACCGTTACG-3'
PAL R	5'-CGATTAGTGGGTTGTCGTT-3'
LOX F	5'-TAAAGAGGCGTCGTCCAGTC-3'
LOX R	5'-ACCAACGGAAGGTAACAAGC-3'
PDF1.2 F	5'-CATCACCTTCTCTTCGCTGC-3'
PDF1.2 R	5'-ATGTCCCACTTGACCTCTCGC-3'

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**Table S2** Effects of *B. subtilis* on *G. uralensis* adventitious root growth and metabolites accumulation

<i>B. subtilis</i> (mg·L <sup>-1</sup> )	Growth rate	Total flavonoid content(mg·g <sup>-1</sup> )	Glycyrrhizic acid content(mg·g <sup>-1</sup> )	Glycyrrhetic acid content(mg·g <sup>-1</sup> )	Polysaccharide content(mg·g <sup>-1</sup> )
0	6.05±0.10a	3.24±0.05a	0.11±0.02a	0.12±0.03a	40.12±0.45a
100	5.90±0.07ac	4.69±0.07b	0.18±0.02b	0.21±0.02bc	57.98±0.09b
200	5.80±0.13bc	6.70±0.12c	0.25±0.03cd	0.25±0.02b	63.08±0.58c
400	5.70±0.07bc	6.15±0.04d	0.22±0.03bd	0.20±0.02bd	81.78±0.13d
600	5.60±0.07b	5.34±0.12e	0.18±0.01b	0.17±0.03acd	68.72±0.58e

**Table S3** Effects of *P. fellutanum* on *G. uralensis* adventitious root growth and metabolites accumulation

<i>P. fellutanum</i> (mg·L <sup>-1</sup> )	Growth rate	Total flavonoid content(mg·g <sup>-1</sup> )	Glycyrrhizic acid content(mg·g <sup>-1</sup> )	Glycyrrhetic acid content(mg·g <sup>-1</sup> )	Polysaccharide content(mg·g <sup>-1</sup> )
0	6.20±0.07a	3.47±0.10a	0.10±0.01a	0.12±0.03a	40.01±0.15a
100	6.00±0.07b	5.80±0.13b	0.17±0.02b	0.19±0.03ac	69.28±0.29b
200	5.90±0.07bd	7.32±0.09c	0.23±0.02cd	0.25±0.04bcd	85.32±0.12c
400	5.80±0.07cd	5.77±0.19b	0.19±0.01bd	0.21±0.02bce	72.34±0.30d
600	5.65±0.03c	5.03±0.11d	0.17±0.02b	0.18±0.02ade	63.09±0.21e

**Table S4** Effects of *E. coli* on *G. uralensis* adventitious root growth and metabolites accumulation

<i>E. coli</i> (mg·L <sup>-1</sup> )	Growth rate	Total flavonoid content(mg·g <sup>-1</sup> )	Glycyrrhizic acid content(mg·g <sup>-1</sup> )	Glycyrrhetic acid content(mg·g <sup>-1</sup> )	Polysaccharide content(mg·g <sup>-1</sup> )
0	5.80±0.07a	3.12±0.09a	0.12±0.02a	0.11±0.02a	41.32±0.23a
100	5.70±0.13ad	5.16±0.10b	0.26±0.01be	0.27±0.03b	54.19±0.35b
200	5.50±0.13bd	8.05±0.13c	0.45±0.03c	0.42±0.02c	64.34±0.58c
400	5.40±0.07be	6.94±0.05d	0.32±0.03b	0.33±0.05b	98.34±0.55d
600	5.15±0.10ce	6.34±0.15e	0.24±0.03de	0.27±0.04b	74.08±0.42e