

Metabolic Regulation and Antihyperglycemic Properties of the Diet-derived PGG through Transcriptomic and Metabolomic Profiling

An-Nan Zhang[†], Chengdi Huang[†], Lili Yan, Xiaoyi, Liu, Fengyu, Wang, Zhichao Zhang, Luqi Li, Cunli Zhang* and Qiang Zhang*

Shaanxi Key Laboratory of Natural Products & Chemical Biology, College of Chemistry &
Pharmacy, Northwest A&F University, Yangling, 712100, Shanxi, China

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Table S1. Plant distribution of PGG

family	genus	Canonical Name
Rhizobiaceae	Rhizobium	Agrobacterium rhizogenes
Caryocaraceae	Caryocar	Caryocar villosum
Rhizobiaceae	Rhizobium	Rhizobium rhizogenes
Lythraceae	Cuphea	Cuphea hyssopifolia
Lythraceae	Punica	Punica granatum
Lythraceae	Woodfordia	Woodfordia fruticosa
Combretaceae	Terminalia	Terminalia chebula
Phyllanthaceae	Phyllanthus	Phyllanthus emblica
Myrtaceae	Eucalyptus	Eucalyptus alba
Amaranthaceae	Cornulaca	Cornulaca monacantha
Juglandaceae	Rhoiptelea	Rhoiptelea chiliantha
Juglandaceae	Platycarya	Platycarya strobilacea
Juglandaceae	Juglans	Juglans sigillata
Rosaceae	Rosa	Rosa davurica
Myrtaceae	Syzygium	Syzygium aromaticum
Myrtaceae	Eucalyptus	Eucalyptus globulus
Myrtaceae	Melaleuca	Melaleuca leucadendra
Nymphaeaceae	Nymphaea	Nymphaea lotus
Altingiaceae	Liquidambar	Liquidambar formosana
Fagaceae	Quercus	Quercus acutissima
Fagaceae	Quercus	Quercus phillyraeoides
Fagaceae	Quercus	Quercus suber
Fagaceae	Quercus	Quercus aliena
Fagaceae	Quercus	Quercus infectoria
Fagaceae	Castanopsis	Castanopsis fissa
Plantaginaceae	Plantago	Plantago major
Geraniaceae	Geranium	Geranium thunbergii
Melastomataceae	Phyllagathis	Phyllagathis rotundifolia
Sapindaceae	Acer	Acer truncatum
Cercidiphyllaceae	Cercidiphyllum	Cercidiphyllum japonicum
Fabaceae	Fordia	Fordia fruticosa
Fabaceae	Lotus	Lotus corniculatus
Fabaceae	Haematoxylum	Haematoxylum campechianum
Anacardiaceae	Mangifera	Mangifera indica
Euphorbiaceae	Euphorbia	Euphorbia maculata
Euphorbiaceae	Euphorbia	Euphorbia thymifolia
Euphorbiaceae	Euphorbia	Euphorbia helioscopia
Euphorbiaceae	Euphorbia	Euphorbia humifusa
Paeoniaceae	Paeonia	Paeonia lactiflora
Paeoniaceae	Paeonia	Paeonia suffruticosa
Paeoniaceae	Paeonia	Paeonia hybr
Crassulaceae	Rhodiola	Rhodiola rosea

Anacardiaceae	Rhus	Rhus typhina
Anacardiaceae	Toxicodendron	Toxicodendron verniciflum
Anacardiaceae	Cotinus	Cotinus coggygia
Rosaceae	Geum	Geum japonicum
Rosaceae	Sanguisorba	Sanguisorba officinalis
Euphorbiaceae	Excoecaria	Excoecaria agallocha
Euphorbiaceae	Euphorbia	Euphorbia jolkinii
Euphorbiaceae	Euphorbia	Euphorbia watanabei
Euphorbiaceae	Mallotus	Mallotus japonicus
Crassulaceae	Rhodiola	Rhodiola sachalinensis
Hamamelidaceae	Loropetalum	Loropetalum chinense

Table S2. Primer Sequences for qRT-PCR

Primer	5' to 3'	length
<i>fthl27-F</i>	GCTTTACGCTGGATACACCTACACC	25
<i>fthl27-R</i>	CGCTCCTCCTCACTGTTCTTCTTG	25
<i>plat-F</i>	CGTCAGTTCGTCAGGAATGGAGTG	24
<i>plat-R</i>	AGTGTGCTCGCCTCTGGTCTC	21
<i>aacs-F</i>	CCTCTCTTGTCCCAGTGCCAATG	24
<i>aacs-R</i>	TCCAACACAGCCAGCCATTTTCG	22
<i>LOC110438965-F</i>	CTCTTGGTTTTGGAGAATCGGGATCG	25
<i>LOC110438965-R</i>	ACAATCACACGGTGGATGAGAACTC	25
<i>parp4-F</i>	TGCTGGAGGAGAGGCTGAACTG	22
<i>parp4-R</i>	CATTGAGGCTGATTCTGGACACTGG	25
<i>aldh3a2b-F</i>	TCAATCAGCGGCACTTCAAGAGAC	24
<i>aldh3a2b-R</i>	CTCAGCACTGTTGGAGCGATGTAG	24
<i>si:dkey-183n20.15-F</i>	CATGTCGTTGGCGGCTCTTCC	21
<i>si:dkey-183n20.15-R</i>	AGTGCGTTCCGGTCTCTGG	20
<i>rnf38-F</i>	CACCACCACCACCATCATCATCATC	25
<i>rnf38-R</i>	CTTAACGCACCACCGCCACTC	21
<i>trim13-F</i>	AGGCTCCAGTTCCACAGATCCG	22
<i>trim13-R</i>	GCTCCATCCTGTCCTTGTGTTGTAG	25
<i>trim8a-F</i>	TCCCACATCCAGACGCACCTC	21
<i>trim8a-R</i>	AGACCGACACCTGCTCCACATC	22
<i>otud1-F</i>	AACTCTCACCACCGTCACCAATAAC	25
<i>otud1-R</i>	CGTGTGCTCTTCTGTATCGCTTCC	24
<i>hmgcs1-F</i>	TTGAAGAGTCGGGCAAACTGATG	24
<i>hmgcs1-R</i>	ACCAGCAACAACCAGAGCGTAAC	23
<i>cers2a-F</i>	CGTACTCATCCTGCGTATGGCTATC	25
<i>cers2a-R</i>	TCACTCTCCTGTCCCTTCTCGTCTTC	25
<i>acer1-F</i>	CCCGCAAACACTTCCCTTCCCTTC	23
<i>acer1-R</i>	AAGCAGTTGAGAGCGTAGGCATTG	24
<i>capn2b-F</i>	GTGTCCTGCCTGATGCGTCTTG	22
<i>capn2b-R</i>	TCTTGAGTGCTGTGCTTTGAAGGG	24
<i>cers3a-F</i>	CACTGCCATACGCTCTCATCTTCC	24
<i>cers3a-R</i>	GTTGTGCTCCGCTCTGTGTCTG	22
<i>cers6-F</i>	GGACGACCGCAGTGACATTGAG	22
<i>cers6-R</i>	GACACAGGGACGAGGACAGGTAG	23
<i>casp21-F</i>	GCCATGCTTTGCCTCTAGACTGAC	24
<i>casp21-R</i>	AAACCCTGTGAATGCCCTGTGAAC	25
<i>β-actin-F</i>	AACGAACGACCAACCTAAACCTCTC	25
<i>β-actin-R</i>	CTCCCTTTCCAGTTTCCGCATCC	23

Table S3. Biological activities of PGG.

NO.	pChEMBL*	Target	Target.Type	Document ID
1	7.30	Thrombin	single protein	CHEMBL1151307
2	6.77	Coagulation factor X	single protein	CHEMBL1151307
3	6.52	Anthrax toxin receptor 2	single protein	CHEMBL2321858
4	6.33	Squalene monooxygenase	single protein	CHEMBL1155741
5	5.96	Genome polyprotein	single protein	CHEMBL3232942
6	5.80	NS3	single protein	CHEMBL1137108
7	5.79	HCT-116	cell-line	CHEMBL4118193
8	5.63	Salivary α -amylase	single protein	CHEMBL3616379
9	5.50	Xanthine dehydrogenase	single protein	CHEMBL1147277
10	5.42	Beta-secretase 1	single protein	CHEMBL3286369
11	5.40	Protein kinase C (PKC)	protein family	CHEMBL1149998
12	5.35	HT-29	cell-line	CHEMBL4118193
13	4.92	Neuraminidase	single protein	CHEMBL3232942
14	4.82	HIV1	organism	CHEMBL1126373
15	4.03	HepG2	cell-line	CHEMBL3232942

* acquired from ChEMBL database on May 20, 2022 (<https://www.ebi.ac.uk/chembl/>).

pChEMBL values were officially calculated by $-\lg(\text{EC}_{50}$ or IC_{50}).

Table S4. Pathways associated with the action of PGG.

KEGG ID	KEGG Name	$-\log(p)$	Matched Features
dre00600	Sphingolipid metabolism	5.88	Sphingosine (C00319)
dre04210	Apoptosis	6.00	Sphingosine (C00319)
dre04217	Necroptosis	6.00	Sphingosine (C00319)
dre04371	Apelin signaling pathway	1.38	Sphingosine (C00319)
dre00053	Ascorbate and aldarate metabolism	1.82	D-Glucuronolactone (C02670)
dre00290	Valine, leucine, and isoleucine biosynthesis	6.00	2-Methylmaleate(C02226)
dre00650	Butanoate metabolism	3.56	(R)-3-Hydroxybutanoate (C01089)
dre01210	2-Oxocarboxylic acid metabolism	1.80	2-Methylmaleate(C02226)
dre01230	Biosynthesis of amino acids	4.18	2-Methylmaleate(C02226)
dre00770	Pantothenate and CoA biosynthesis	5.17	Pantetheine 4'-phosphate (C01344)