

Table S1. Abbreviations

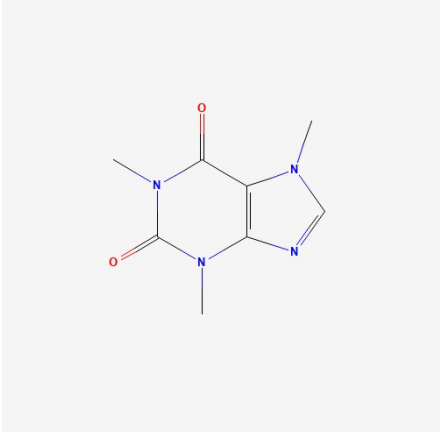
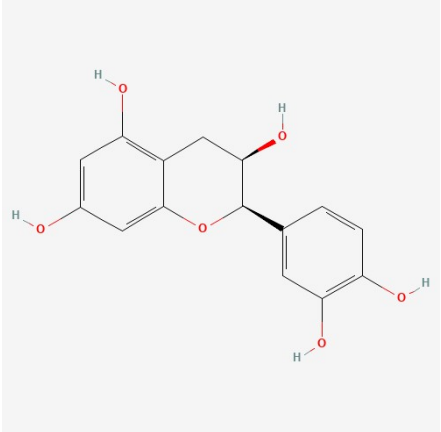
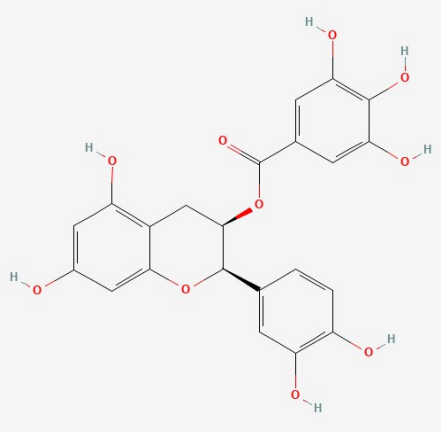
Abbreviation	Full name
ALD	Alcoholic liver disease
ARH	Alcoholic-related hepatitis
BP	Biological processes
CA	Catechin
CAF	Caffeine
CC	Cellular components
EC	Epicatechin
ECG	Epicatechin gallate
EGC	Epigallocatechin
EGCG	Epigallocatechin gallate
GCG	Gallocatechin gallate
GO	Gene Ontology
GSH	Glutathione
GWAE	Alcohol extract of green tea
GTWE	Water extract of green tea
HPLC	High Performance Liquid Chromatography
KEGG	Kyoto Encyclopedia of Genes and Genomes
LPS	Lipopolysaccharide
MD2	Myeloid differentiation factor 2
MF	Molecular functions

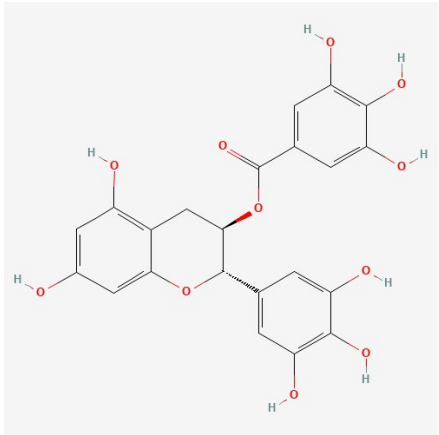
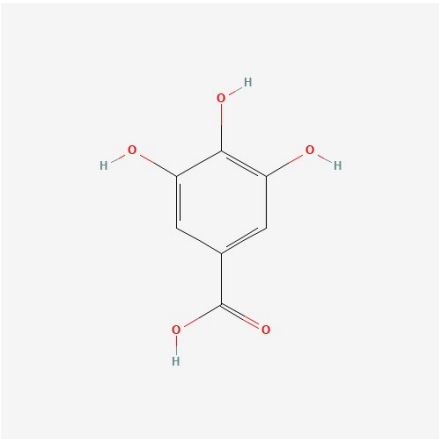
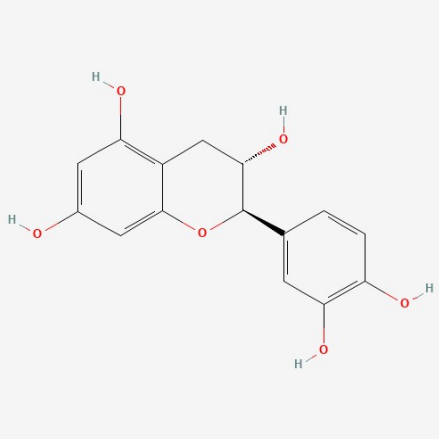
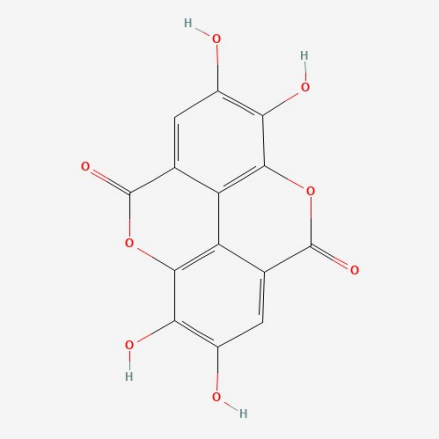
MyD88	Myeloid differentiation marker 88
PPI	Protein-protein interaction
TRAF6	TNF receptor-associated factor 6
TRIF	TIR-domain-containing adaptor inducing interferon- $\beta$

Table S2. RT-qPCR primer sequences.

Gene	Forward	Reverse
GAPDH	AGGTCGGTGTGAACGGATTTG	TGTAGACCATGTAGTTGAGGTCA
IL-1 $\beta$	GCAACTGTTCTGAACTCAACT	ATCTTTTGGGGTCCGTCAACT
IL-6	TAGTCCTTCCTACCCCAATTTCC	TTGGTCCTTAGCCACTCCTTC
TNF- $\alpha$	AGCCGATGGGTTGTACCT	TGAGTTGGTCCCCCTTCT
Occludin	TTGAAAGTCCACCTCCTTACAGA	CCGGATAAAAAGAGTACGCTGG
ZO-1	ACCACCAACCCGAGAAGAC	CAGGAGTCATGGACGCACA
MUC2	TTCGGCACGAGCAACTTTG	GGCAGGACACCTTGTTCATTG

Table S3. Components in green Tea

Component	2D Structure	PubChem CID
<p><b>Caffeine</b></p>	 <p>The image shows the 2D chemical structure of caffeine, which is 1,3,7-trimethylxanthine. It consists of a fused pyrimidine-imidazole ring system with three methyl groups attached to the nitrogen atoms and two carbonyl groups.</p>	<p><b>2519</b></p>
<p><b>Epicatechin</b></p>	 <p>The image shows the 2D chemical structure of epicatechin, a flavan-3-ol. It features a chromane core with two catechol rings attached at the 2 and 3 positions. The structure includes several hydroxyl groups on the aromatic rings.</p>	<p><b>72276</b></p>
<p><b>Epicatechin gallate</b></p>	 <p>The image shows the 2D chemical structure of epicatechin gallate, an ester of epicatechin and gallic acid. It features the epicatechin core with a gallic acid moiety attached to the 3-position of the chromane ring. The gallic acid moiety has three hydroxyl groups on its aromatic ring.</p>	<p><b>107905</b></p>

<p><b>Gallocatechin gallate</b></p>	 <p>The structure shows a central chromane ring system. The 2-position of the chromane is linked via an ester bond to a gallic acid moiety. The 3-position of the chromane is linked via a carbon-carbon bond to another gallic acid moiety. Each gallic acid moiety consists of a benzene ring with three hydroxyl groups and a carboxylic acid group.</p>	<p><b>199472</b></p>
<p><b>Gallic acid</b></p>	 <p>The structure shows a benzene ring with three hydroxyl groups at the 2, 4, and 6 positions and a carboxylic acid group at the 1 position.</p>	<p><b>370</b></p>
<p><b>Catechin</b></p>	 <p>The structure shows a central chromane ring system. The 2-position of the chromane is linked via an ester bond to a gallic acid moiety. The 3-position of the chromane is linked via a carbon-carbon bond to another gallic acid moiety.</p>	<p><b>9064</b></p>
<p><b>Ellagic acid</b></p>	 <p>The structure shows a naphthalene ring system with two carboxylic acid groups at the 1 and 8 positions and two hydroxyl groups at the 2 and 7 positions.</p>	<p><b>5281855</b></p>

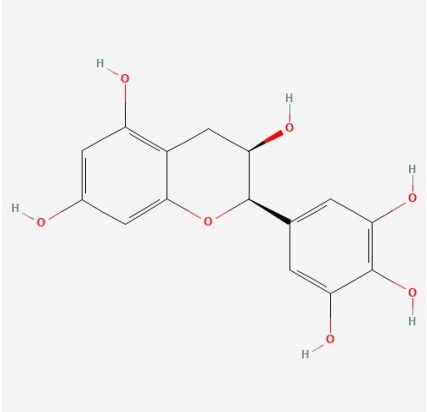
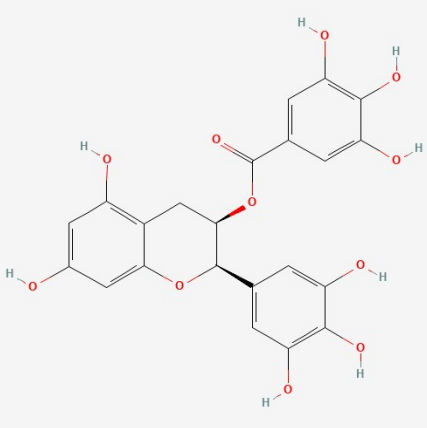
<p><b>Epigallocatechin</b></p>	 <p>The image shows the chemical structure of Epigallocatechin. It consists of a flavan-3-ol core, specifically a catechin, with two gallic acid units attached. One gallic acid unit is attached to the C2 position of the chromane ring system, and the other is attached to the C3 position. The gallic acid units are shown as phenyl rings with three hydroxyl groups each. The hydroxyl groups are represented as H-O.</p>	<p><b>72277</b></p>
<p><b>Epigallocatechin gallate</b></p>	 <p>The image shows the chemical structure of Epigallocatechin gallate. It is a dimeric polyphenol consisting of an epigallocatechin unit and a gallic acid unit. The epigallocatechin unit is a flavan-3-ol core with two gallic acid units attached to the C2 and C3 positions. The gallic acid unit is attached to the C3 position of the epigallocatechin unit via an ester linkage. The gallic acid unit is shown as a phenyl ring with three hydroxyl groups. The hydroxyl groups are represented as H-O.</p>	<p><b>65064</b></p>

Table S4. Content of compounds in GTAE and GTWE

Component	GTWE( $\mu\text{g}/\text{mg}$ )
Galli acid	1.5 $\pm$ 0.01
Epigallocatechin	12.35 $\pm$ 0.27
Catechin	6.57 $\pm$ 0.04
Caffeine	20.49 $\pm$ 0.17
Epigallocatechin gallate	32.23 $\pm$ 0.27
Epicatechin	6.24 $\pm$ 0.11
Gallocatechin gallate	3.01 $\pm$ 0.09
Epicatechin gallate	9.03 $\pm$ 0.03
Ellagic acid	1.43 $\pm$ 0.02

Table S5. The binding energy of active components and core target

	$\Delta\text{G}(\text{kcal}/\text{mol})$	$\text{Kd}(\text{mol}/\text{L})$	$\text{KJ}/\text{mol}$
CAF_TLR4	-4.81	4.06 $\times 10^{-4}$	-20.13
EC_TLR4	-5.32	1.77 $\times 10^{-4}$	-22.26
ECG_TLR4	-3.72	2.38 $\times 10^{-4}$	-15.56
EGC_TLR4	-4.45	7.29 $\times 10^{-4}$	-18.62
EGCG_TLR4	-0.57	3.96 $\times 10^{-1}$	-2.39
GCG_TLR4	-2.44	1.90 $\times 10^{-2}$	-10.21
CC_TLR4	-6.39	3.12 $\times 10^{-5}$	-26.74

