



**Supplementary Fig. 1** UPLC-MS chromatograms in SIM scan mode of (A) HA, (B) caffeic acid, (C) the mixture of HA and caffeic acid, and (D) UPLC-MS/MS chromatogram of the mixture of HA and caffeic acid in MRM scan mode.

**Supplementary Table 1.** Comparisons of different assay methods for ACE activity.

Method	LOD (ng)	Assay time (min)	ACE used (mU)	HHL used (nM)	Specificity
UPLC-MS/MS	$3 \times 10^{-3}$	2.5	1.0	3	+++
UPLC-MS	$5 \times 10^{-3}$	2-3	1.0	3	++
HPLC-UV	8	> 15	5.0	608	+
Spectrophotometry	$5 \times 10^3$	unequal	16.5	1398	-

**Supplementary Table 2.** IC<sub>50</sub> values measured by UPLC-MS and UPLC-MS/MS

Compound	IC <sub>50</sub> (mM)	
	UPLC-MS <sup>a</sup>	UPLC-MS/MS <sup>b</sup>
Captopril	$0.004 \pm 0.001$	$0.002 \pm 0.000$
Acteoside	$2.86 \pm 0.10$	$2.22 \pm 0.21$
Isoacteoside	$2.53 \pm 0.07$	$1.85 \pm 0.02$
Plantamajoside	$2.82 \pm 0.18$	$2.28 \pm 0.19$

*High correlation between two groups a and b based on pearson correlation analysis ( $R=0.996955$ ); No significant differences between two groups based on two-tailed unpaired Student's *t*-tests ( $p=0.6127$ ).*