SUPPLEMENTARY MATERIAL

Isolation, characterization, and xanthine oxidase inhibitory activities of flavonoids from the leaves of *Perilla frutescens*

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**Abstract**

Phytochemical investigation of the water extract from the leaves of *Perilla frutescens* (Lamiaceae) led to the isolation of a new flavanone, a new chalcone, and a new aurone, namely, (2S)-5,7-dimethoxy-8,4'-dihydroxyflavanone (1), 2',4'-dimethoxy-4,5',6'-trihydroxychalcone (2), and (Z)-4,6-dimethoxy-7,4'-dihydroxyaurone (3), respectively. The structures were unambiguously elucidated on the basis of spectroscopic data. And the absolute configuration of 1 was determined by analysis of electronic circular dichroism spectrum. The isolated compounds were evaluated for their inhibitory effects on xanthine oxidase *in vitro*. Among them, 2 showed more potent activity than the positive control allopurinol, a well-known XO inhibitor clinically used for treatment of gout. Lineweaver-Burk transformation of the inhibition kinetics data demonstrated that it was a mixed-type inhibitor.

**Keywords:** *Perilla frutescens* (L.) Britt.; hyperuricemia; xanthine oxidase; flavanone; chalcone; aurone
Figure S1. Lineweaver-Burk plots of compound 2 on XO inhibitory activity
Figure S2. $^1$H NMR spectrum of compound 1

Figure S3. $^{13}$C NMR spectrum of compound 1
Figure S4. HMBC spectrum of compound 1

Figure S5. $^1$H NMR spectrum of compound 1
**Figure S6.** $^{13}$C NMR spectrum of compound 2

**Figure S7.** HMBC spectrum of compound 2
Figure S8. $^1$H NMR spectrum of compound 3

Figure S9. $^{13}$C NMR spectrum of compound 3
Figure S10. HMBC spectrum of compound 3