

Null B-ring Improves the Antioxidant Levels of Flavonol: A Comparative Study between Galangin and 3,5,7-Trihydroxychromone

Xiaojian Ouyang^{1,2,†}, Xican Li^{1,2,†,*}, Wenbiao Lu^{1,2}, Xiaojun Zhao^{1,2}, and Dongfeng Chen^{3,4,*}

¹ School of Chinese Herbal Medicine; Guangzhou University of Chinese Medicine, Guangzhou 510006, China. E-mails: 931504113@qq.com (X.O.);

² Innovative Research & Development Laboratory of TCM; Guangzhou University of Chinese Medicine, Guangzhou 510006, China.

³ School of Basic Medical Science, Guangzhou University of Chinese Medicine, Guangzhou, China, 510006

⁴ The Research Center of Basic Integrative Medicine, Guangzhou University of Chinese Medicine, Guangzhou, China, 510006. E-mail: chen888@gzucm.edu.cn (D.C.)

* Correspondence: lixc@gzucm.edu.cn (X.L.); lixican@126.com (X.L.); chen888@gzucm.edu.cn (D.C.)
Tel: +86-20-39358076; Fax: +86-20-38892690

† These authors contributed equally to this work.

Note: This Supporting Information file provides the original data of Table 1 in the main text. All underlined data are mentioned in Table 1 in the main text.

Superoxide anion ($\bullet\text{O}_2^-$) scavenging assay

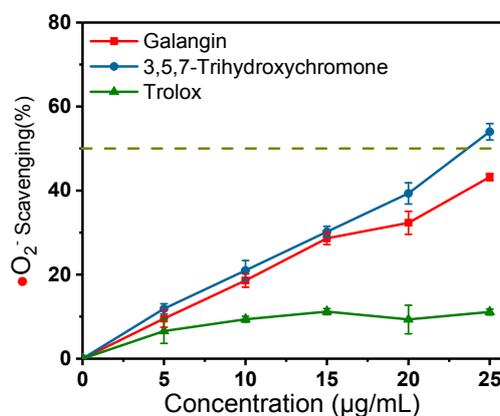


Figure S1: The dose response curves of galangin and 3,5,7-trihydroxychromone in $\bullet\text{O}_2^-$ -inhibition assay. Each value is expressed as mean \pm SD (n = 3).

Table S1. The comparison of IC_{50} values of galangin and 3,5,7-trihydroxychromone and positive control in $\bullet\text{O}_2^-$ scavenging assay.

	Mean \pm SD $\mu\text{g/mL}$	Mean \pm SD μM
Galangin	29.4 \pm 1.2	<u>108.7\pm4.4^a</u>
3,5,7-Trihydroxychromone	24.4 \pm 0.9	<u>125.4\pm4.9^b</u>
Trolox	1243.6 \pm 39.5	<u>4968.4\pm157.9</u>

IC_{50} value was defined as the concentration of 50% superoxide anion radical inhibition and calculated by linear regression which was analyzed by Origin 6.0 professional software. Means values with different superscripts in the same column are significantly different ($p < 0.05$).

DPPH•-scavenging assay

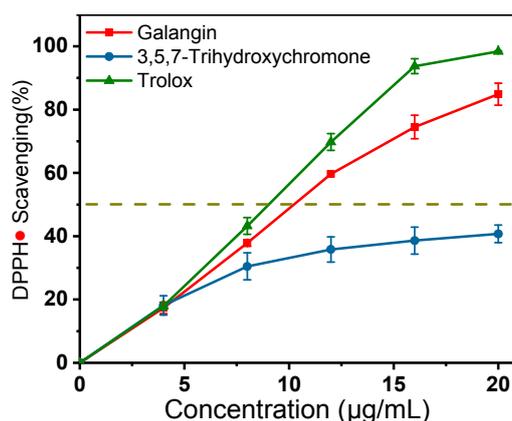


Figure S2: The dose response curves of galangin and 3,5,7-trihydroxychromone in DPPH•-scavenging assay. Each value is expressed as mean \pm SD (n = 3).

Table S2. The comparison of IC₅₀ values of galangin and 3,5,7-trihydroxychromone and positive control in DPPH•-scavenging assay.

	Mean \pm SD μ g/mL	Mean \pm SD μ M
Galangin	2.7 \pm 0.1	<u>10.2\pm0.3</u> ^a
3,5,7-Trihydroxychromone	26.0 \pm 4.2	<u>134.1\pm21.4</u> ^b
Trolox	9.2 \pm 0.3	<u>36.9\pm1.0</u>

IC₅₀ value was defined as the concentration of 50% superoxide anion radical inhibition and calculated by linear regression which was analyzed by Origin 6.0 professional software. Means values with different superscripts in the same column are significantly different (p<0.05).

PTIO•-scavenging assay

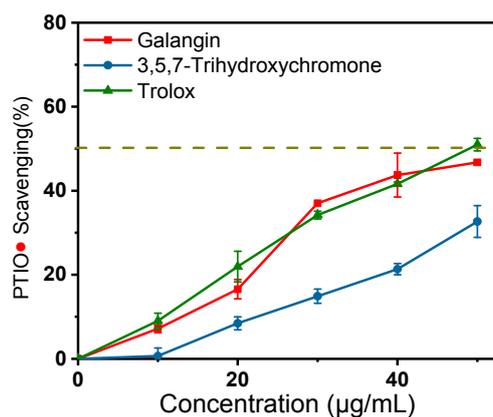


Figure S3: The dose response curves of galangin and 3,5,7-trihydroxychromone in PTIO•-scavenging assay. Each value is expressed as mean \pm SD (n = 3).

Table S3: The comparison of IC₅₀ values of galangin and 3,5,7-trihydroxychromone and positive control in PTIO•-scavenging assay.

	Mean±SD µg/mL	Mean±SD µM
Galangin	2.7±0.1	<u>176.7±24.3^a</u>
3,5,7-Trihydroxychromone	26.0±4.2	<u>395.1±33.3^b</u>
Trolox	9.2±0.3	<u>186.3±7.2</u>

IC₅₀ value was defined as the concentration of 50% superoxide anion radical inhibition and calculated by linear regression which was analyzed by Origin 6.0 professional software. Means values with different superscripts in the same column are significantly different (p<0.05).

Fe³⁺-reducing power assay

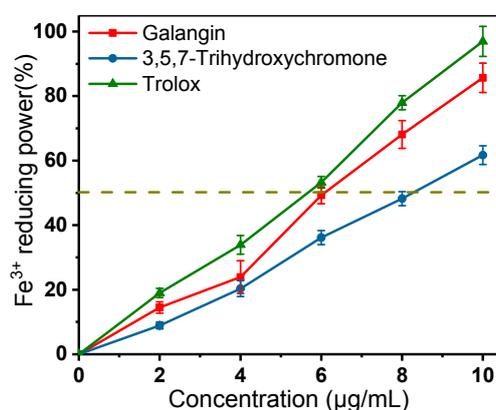


Figure S4: The dose response curves of galangin and 3,5,7-trihydroxychromone in Fe³⁺-reducing power assay. Each value is expressed as mean ± SD (n = 3).

Table S4: The comparison of IC₅₀ values of galangin and 3,5,7-trihydroxychromone and positive control in Fe³⁺-reducing power assay.

	Mean±SD µg/mL	Mean±SD µM
Galangin	6.2±0.4	<u>22.9±1.3^a</u>
3,5,7-Trihydroxychromone	8.3±0.3	<u>42.5±1.6^b</u>
Trolox	5.4±0.2	<u>21.5±0.8</u>

IC₅₀ value was defined as the concentration of 50% superoxide anion radical inhibition and calculated by linear regression which was analyzed by Origin 6.0 professional software. Means values with different superscripts in the same column are significantly different (p<0.05).

ABTS⁺•-scavenging assay

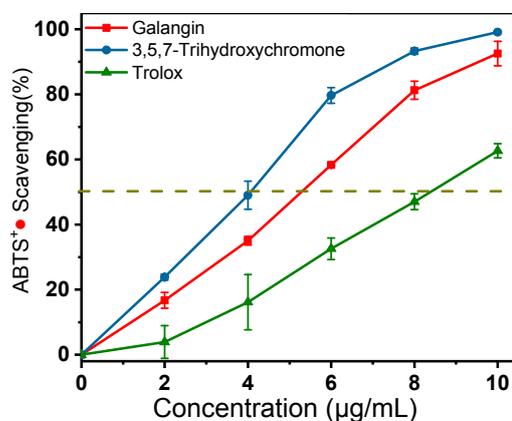


Figure S5: The dose response curves of galangin and 3,5,7-trihydroxychromone in ABTS⁺•-scavenging assay. Each value is expressed as mean ± SD (n = 3).

Table S5: The comparison of IC₅₀ values of galangin and 3,5,7-trihydroxychromone and positive control in ABTS⁺•-scavenging assay.

	Mean±SD µg/mL	Mean±SD µM
Galangin	5.3±0.1	<u>19.7±0.1</u> ^a
3,5,7-Trihydroxychromone	4.1±0.1	<u>20.9±0.3</u> ^a
Trolox	10.8±0.4	<u>43.3±1.7</u>

IC₅₀ value was defined as the concentration of 50% superoxide anion radical inhibition and calculated by linear regression which was analyzed by Origin 6.0 professional software. Means values with different superscripts in the same column are significantly different (p<0.05).