**Supplementary Information**

# Prevention of Fine Dust–Induced Vascular Senescence by *Humulus lupulus* Extract and Its Major Bioactive Compounds

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**Figure S1. Spectral data for hop prenylated flavonoids isoxanthohumol (IX) and xanthohumol (XN).**

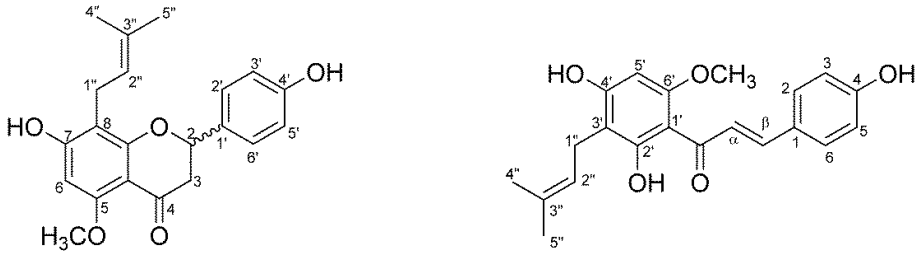


**Figure S1.** Spectral data for hop prenylated flavonoids isoxanthohumol (IX) and xanthohumol (XN).

The $^{1}H$ and $^{13}C$ nuclear magnetic resonance (NMR) data of IX and XN were carried out on a JEOL ECZ-500R F (ourier transform-nuclear magnetic resonance spectrometer (JEOL, Tokyo, Japan). Liquid chromatography–mass spectrometry (LC–MS) data were obtained by a by Agilent 6120 quadruple mass spectrometry (MS) system coupled to Agilent 1260 Infinity liquid chromatography (LC) (Agilent Technologies, Santa Clara, CA, USA) at positive and negative electrospray ionization (ESI) mode.

**Isoxanthohumol (IX)**, $^{1}H$ NMR ($CD_3OD$, 500 MHz) : δ 7.28 (2H, d, *J* = 8.5 Hz, H-2′,6′), 6.79 (2H, d, *J* = 8.5 Hz, H-3′,5′), 6.09 (1H, s, H-6), 5.25 (1H, dd, *J* = 12.5, 3.0 Hz, H-2), 5.11 (1H, brt, *J* = 6.8 Hz, H-2′′), 3.77 (3H, s, 5-$OCH_3$), 3.18 (2H, m, H-1′′), 2.95 (1H, dd, *J* = 16.5, 13.0 Hz, H-3a), 2.63 (1H, dd, *J* = 16.5, 3.0 Hz, H-3b), 1.59 (3H, s, H-5′′), 1.53 (3H, s, H-4′′). $^{13}C$ NMR ($CD_3OD$, 125 MHz) δ 191.6 (C−4), 162.9 (C-8a) 162.5 (C-7), 160.5 (C-5), 157.5 (C-4′), 130.3 (C-3′′), 130.2 (C-1′), 127.5 (C-2′,6′), 122.6 (C-2′′), 114.9 (C-3′,5′), 108.6 (C-8), 104.5 (C-4a), 92.1 (C-6), 78.7 (C-2), 54.6 (5-$OCH_3$), 44.9 (C-3), 24.6 (C-5′′), 21.4 (C-1′′), 16.6 (C-4′′). ESIMS *m*/*z* 355.1 $[M + H]^+$ (calcd. for $C_{21}H_{23}O_5$).

**Xanthohumol (XN)**, $^{1}H$ NMR ($CD_3OD$, 500 MHz) : δ 7.77 (1H, d, *J* = 15.5 Hz, H-α), 7.64 (1H, d, *J* = 15.5 Hz, H- β), 7.47 (2H, d, *J* = 8.5 Hz, H-2,6), 6.80 (2H, d, *J* = 8.5 Hz, H-3,5) 6.00 (1H, s, H-5′), 5.17 (1H, brt, *J* = 7.0 Hz, H-2′′), 3.88 (3H, s, 6′-$OCH_3$), 3.20 (2H, *J*= 7.0 Hz, H-1′′), 1.74 (3H, s, H-5′′), 1.63 (3H, s, H-4′′). $^{13}C$ NMR ($CD_3OD$, 125 MHz) δ 192.7 (C−4), 164.8 (C-2′) 162.4 (C-4′), 161.1 (C-6′), 159.7 (C-4), 142.0 (C-β), 130.2 (C-3′′), 129.9 (C-2,6), 127.1 (C-1), 124.5 (C-α), 122.9 (C-2′′), 115.5 (C-3,5), 108.0 (C-3′), 105.2 (C-1′), 90.3 (C-5′), 54.6 (6′-$OCH_3$), 24.6 (C-5′′), 20.9 (C-1′′), 16.5 (C-4′′). ESIMS *m*/*z* 355.2 $[M + H]^+$ (calcd. for $C_{21}H_{23}O_5$).