Supplementary Information for

# Pharmacokinetics and metabolism of cinnamic acid derivatives and flavonoids after oral administration of Brazilian green propolis in human

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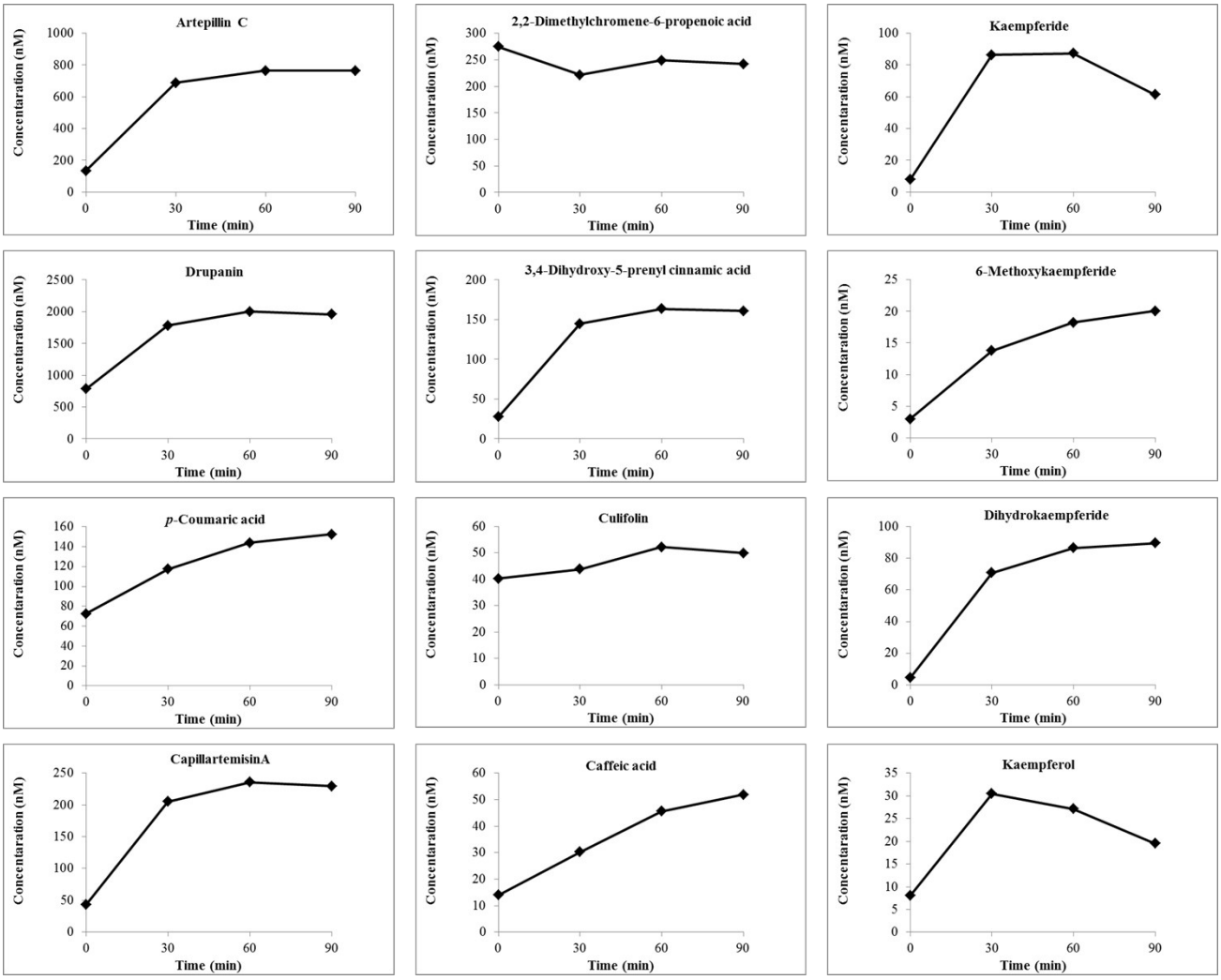


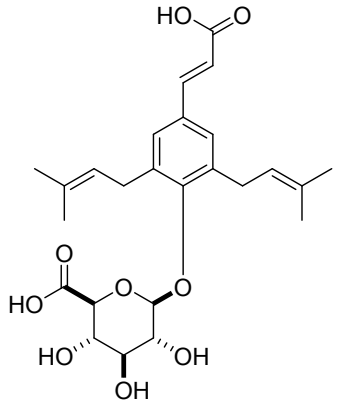

**Figure S1.** Time courses of plasma concentration of each composition during enzymatic hydrolysis reaction. The plasma sample collected from a volunteer at 1h after BGP intake was mixed deconjugation enzyme and incubated at 37 ℃. After incubation at 0 (Immediately after the addition of enzyme), 30, 60, and 90 min, methanol was added to stop the reaction. These samples were prepared to LC/MS/MS analysis according to methods section.

**Chemical shifts of artepillin C-4-*O*-β-D-glucuronide and drupanin 4-*O*-β-D-glucuronide**

General Details

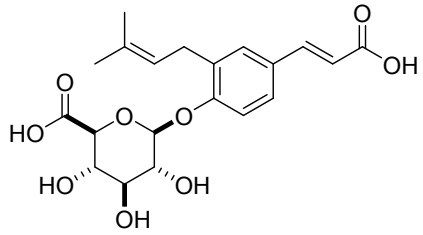
All NMR spectra were recorded on Bruker AVANCE NEO 500 spectrometer. Chemical shifts are reported in ppm on the δ scale relative to $CD_2HOD$ (δ = 3.31 for $^1H$ NMR), $CD_3OD$ (δ = 49.0 for $^{13}C$ NMR) as internal references. Signal patterns are indicated by s (singlet), d (doublet), t (triplet), q (quartet), m (multiplet), br (broaden peak).

artepillin C-4-*O*-β-D-glucuronide




$^1H$ NMR (500 MHz, $CD_3OD$) δ 1.74 (6H, s), 1.77 (6H, s), 3.42–3.54 (3H, m), 3.54–3.65 (5H, m), 4.71 (1H, d, *J* = 7.8 Hz), 5.27–5.32 (2H, m), 6.28 (1H, d, *J* = 15.9 Hz), 7.20 (2H, s), 7.55 (1H, d, *J* = 15.9 Hz). $^{13}C$ NMR (125 MHz, $CD_3OD$) δ 18.1, 25.9, 29.6, 73.3, 75.4, 77.2, 77.5, 106.1, 118.2, 124.1, 128.5, 132.2, 133.8, 137.5, 146.2, 155.7, 170.7, 173.1.

drupanin 4-*O*-β-D-glucuronide




$^1H$ NMR (500 MHz, $CD_3OD$) δ 1.74 (3H, s), 1.76 (3H, s), 3.40 (1H, dd, *J* = 15.7, 7.3 Hz), 3.45 (1H, dd, *J* = 15.7, 7.3 Hz), 3.51 (1H, dd, *J* = 9.1, 9.0), 3.56 (1H, dd, *J* = 9.0, 7.5), 3.63 (1H, dd, *J* = 9.7, 9.1), 3.99 (1H, d, *J* = 9.7 Hz), 5.04 (1H, d, *J* = 7.5 Hz), 5.33–5.38 (1H, m), 6.32 (1H, d, *J* = 15.9 Hz), 7.12 (1H, d, *J* = 8.5 Hz), 7.35 (1H, d, *J* = 2.0 Hz), 7.41 (1H, d, *J* = 8.5, 2.0 Hz), 7.60 (1H, d, *J* = 15.9 Hz). $^{13}C$ NMR (125 MHz, $CD_3OD$) δ 17.9, 25.9, 29.2, 72.9, 74.7, 76.6, 77.6, 102.4, 116.4, 117.3, 123.3, 128.4, 130.1, 130.3, 133.3, 133.9, 146.2, 158.4, 170.7, 172.3.

**Figure S2.** [1]H NMR spectrum of artepillin C-4-*O*-β-D-glucuronide

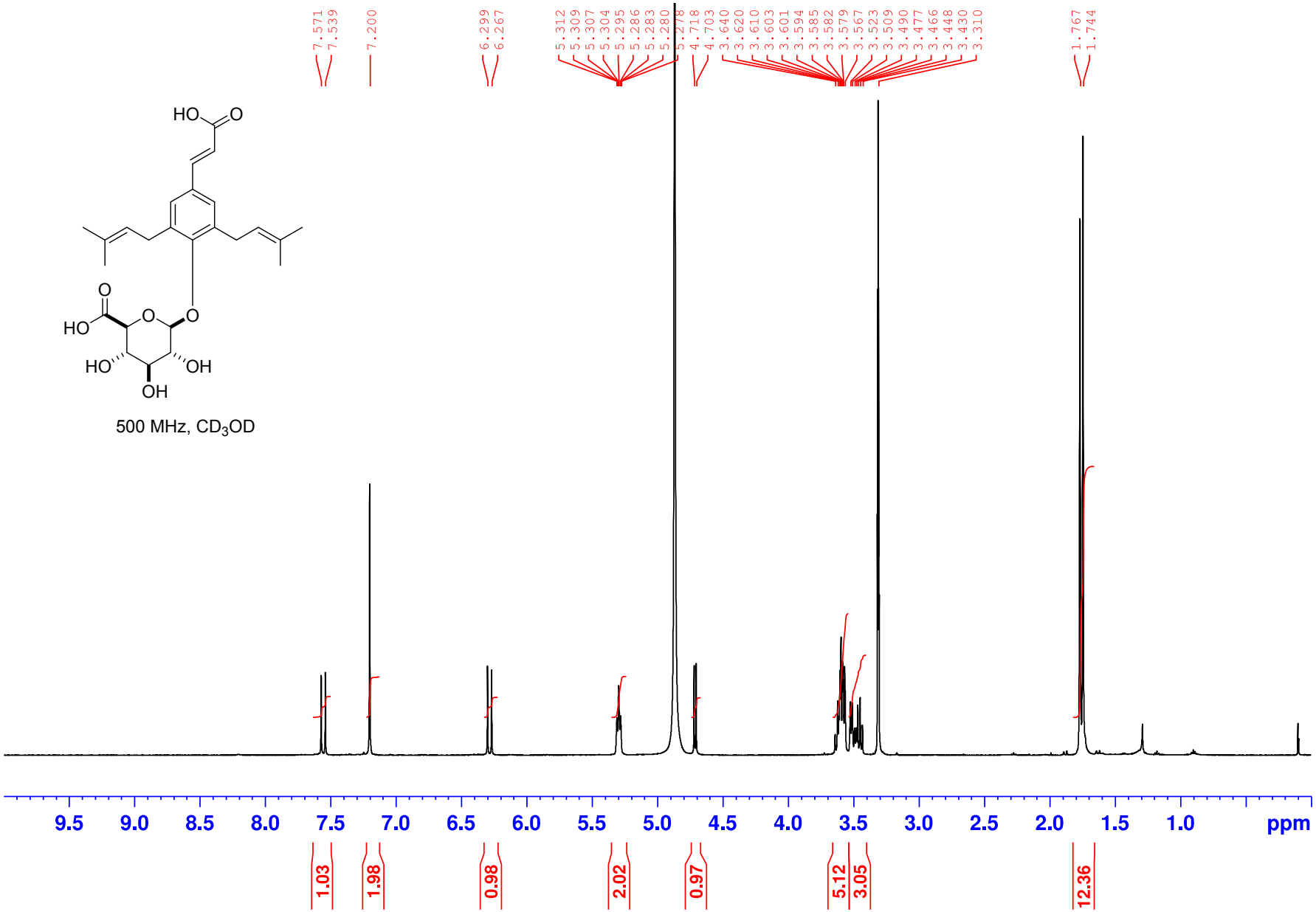


**Figure S3.** $^{13}C$ NMR spectrum of artepillin C-4-*O*-β-D-glucuronide

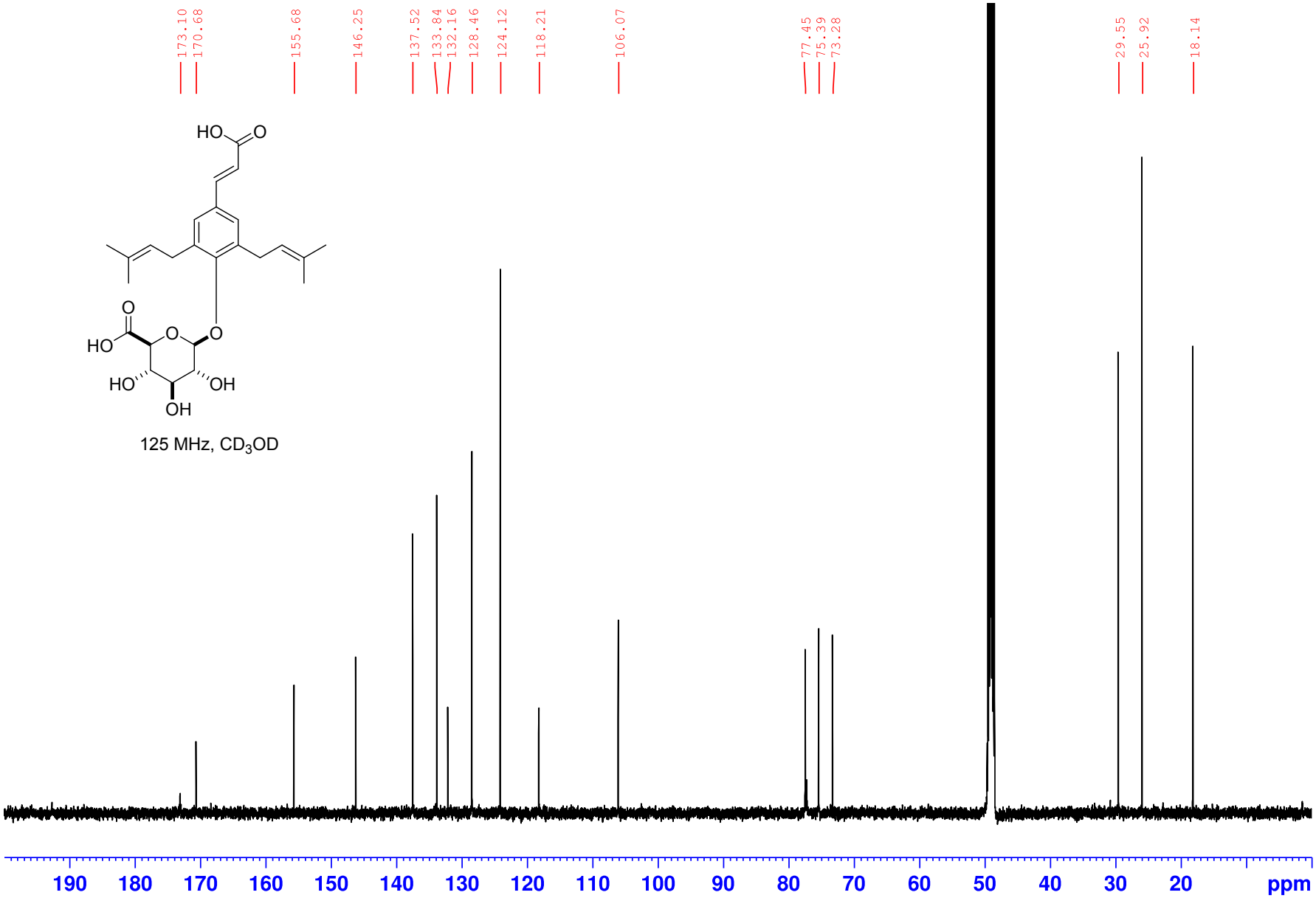


**Figure S4.** HMBC spectrum of artepillin C-4-O-β-D-glucuronide

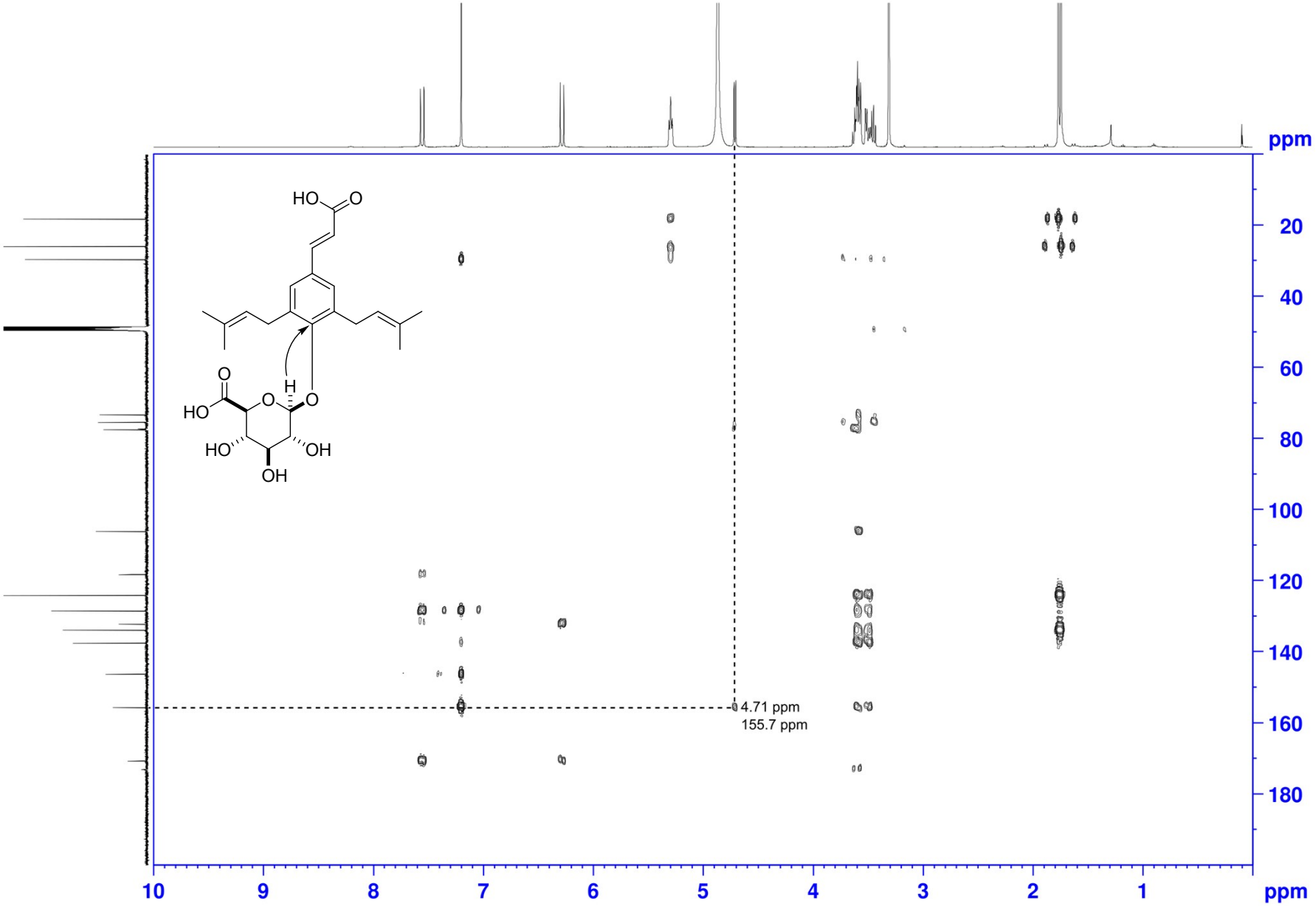


**Figure S5.** $^{1}H$ NMR spectrum of drupanin 4-O-β-D-glucuronide

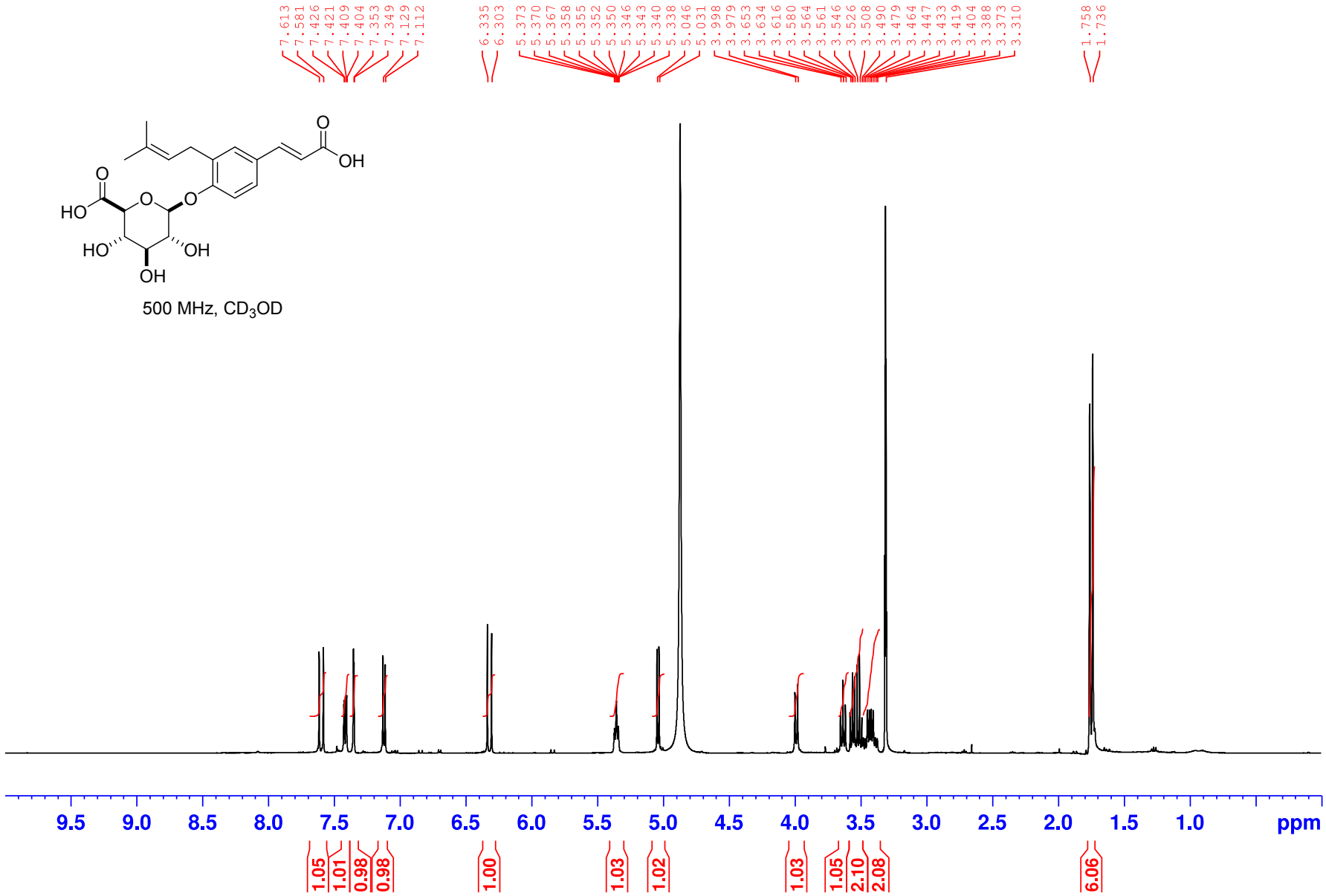


**Figure S6.** $^{13}C$ NMR spectrum of drupanin 4-*O*-β-D-glucuronide

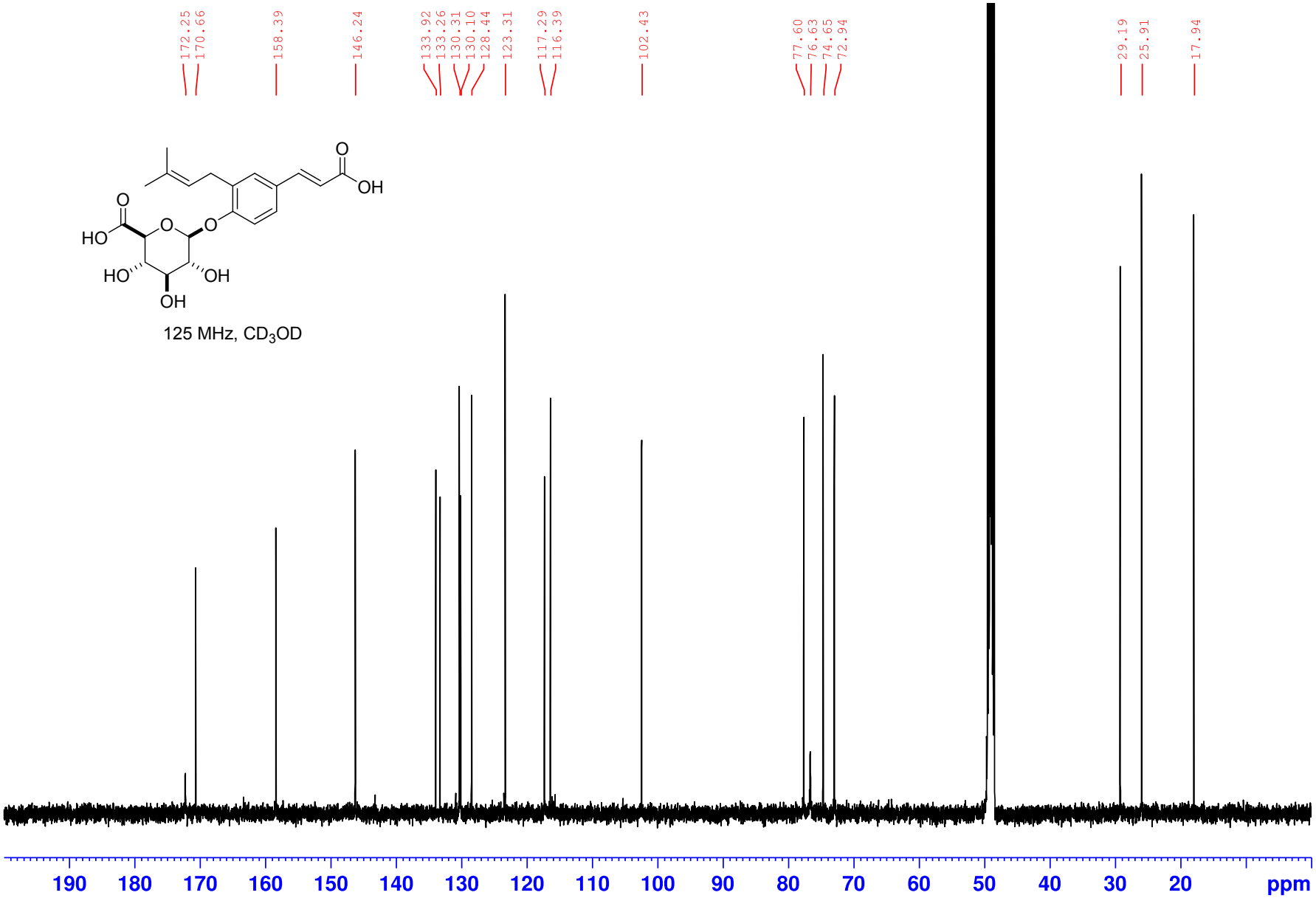


**Figure S7.** HMBC spectrum of drupanin 4-*O*-β-D-glucuronide