SUPPLEMENTARY MATERIAL

New 2-arylbenzofurans from the root bark of *Artocarpus gomezianus* and their α-glucosidase inhibitory activity

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Abstract: Two new 2-arylbenzofurans, namely 13-*O*-methyllakoochin B (**1**) and artogomezianin (**2**), were isolated from the root bark of *Artocarpus gomezianus*, along with 6 known compounds (**3**-**8**). The structures of new compounds were determined by spectroscopic and chemical methods. All of the isolates were evaluated for their α-glucosidase inhibitory activity. Artogomezianin (**2**) and lakoochin A (**3**) exhibited strong α-glucosidase inhibitory activity with IC_{50} values of 18.25 and 26.19 μM, respectively, as compared with the positive control acarbose.

Keywords: *Artocarpus gomezianus*, Moraceae, 2-arylbenzofuran, α-glucosidase

Experimental

General experimental procedures

IR spectra were measured on a Perkin-Elmer FT-IR 1760X spectrophotometer, and UV spectra were obtained on a Milton Roy Spectronic 300 Array spectrophotometer. Mass spectra were recorded on a Bruker micro TOF mass spectrometer (ESI-MS). NMR spectra were recorded on a Bruker Avance DPX-300 FT-NMR spectrometer or a Bruker Avance III HD 500 NMR spectrometer. Microtiter plate reading was performed on a Perkin-Elmer Victor™ 1420 multilabel counter. Vacuum-liquid column chromatography (VLC) and column chromatography (CC) were performed on silica gel 60 (Merck, Kieselgel 60, 70-320 □m), silica gel 60 (Merck, Kieselgel 60, 230-400 □m), C-18 (Merck, Kieselgel 60 RP-18, 40-63 □m) and Sephadex LH-20 (25-100 □m, GE Healthcare).

Methylation of compound 2

Compound **2** (2 mg) was dissolved in 40 □l of acetone. The solution was treated with CH_3I (2 □l) and potassium carbonate (3.4 mg). The reaction mixture was refluxed at 65 °C for 2 hours. After the reaction was completed, the mixture was extracted with CH_2Cl_2 and purified by column chromatography to give compound **2a**.

Assay for α-glucosidase inhibitory activity

The enzyme activity was assessed by monitoring the release of *p*-nitrophenol from the *p*-nitrophenyl-α-D-glucopyranoside (pNPG) substrate. Each test sample was initially evaluated at a concentration of 50 µg/ml, and then two-fold serial dilution was performed for IC_{50} determination. In brief, 10 µl of test sample and 40 µl of 0.1 U/ml α-glucosidase were mixed and allowed to react at 37°C for 10 min in a 96-well microtiter plate. Then, 50 µl of 2 mM pNPG was added and the reaction mixture was further incubated for 20 min. Finally,

100 µl of 1 M Na_2CO_3 solution was added to terminate the reaction. The absorption at 405 nm was then measured using a microplate reader. The percentage of α-glucosidase inhibitory activity was calculated as follows:

$$\% \text{ α-glucosidase inhibitory activity} = [(A_c - A_s)/A_c] \times 100$$

where A_c is the absorbance of the control and A_s is the absorbance of the sample. Acarbose was used as a positive control and treated under the same conditions as the samples. Enzyme inhibition reactions for all samples were carried out in triplicate ($n = 3$), and each experiment consisted of three repetitions.

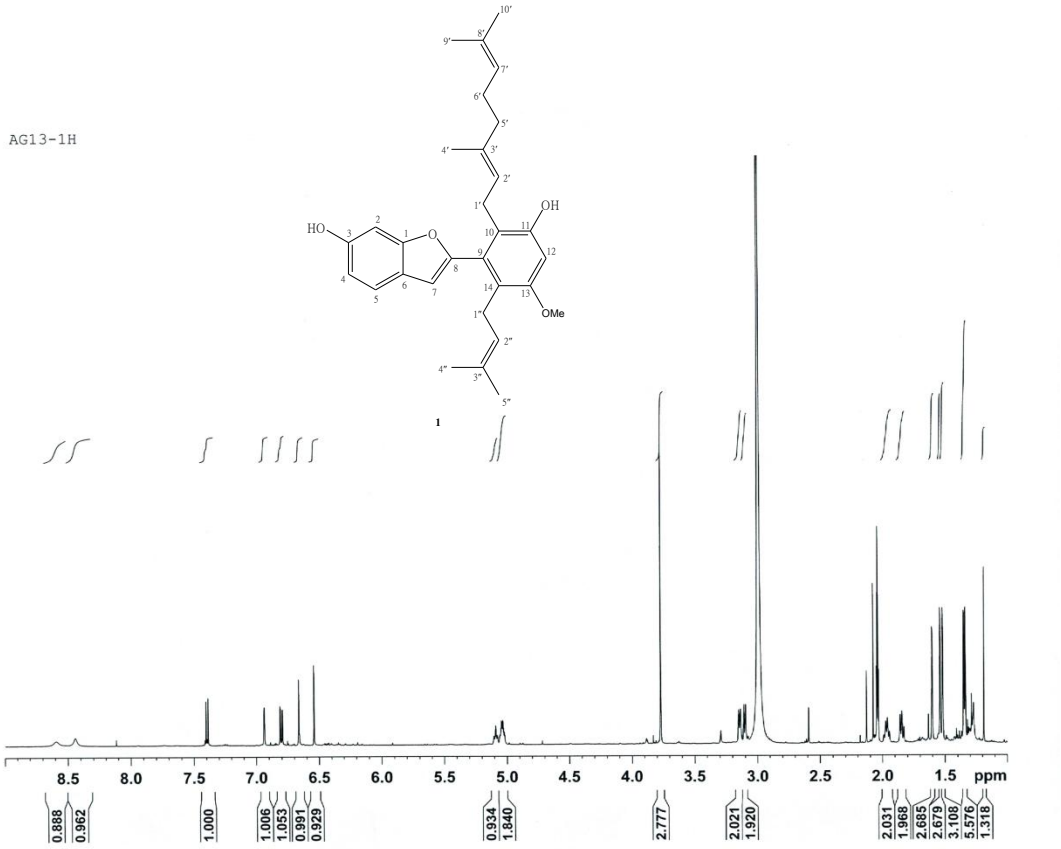

Figure S1. ^{1}H NMR spectrum of **1** (500 MHz) in acetone-d_6

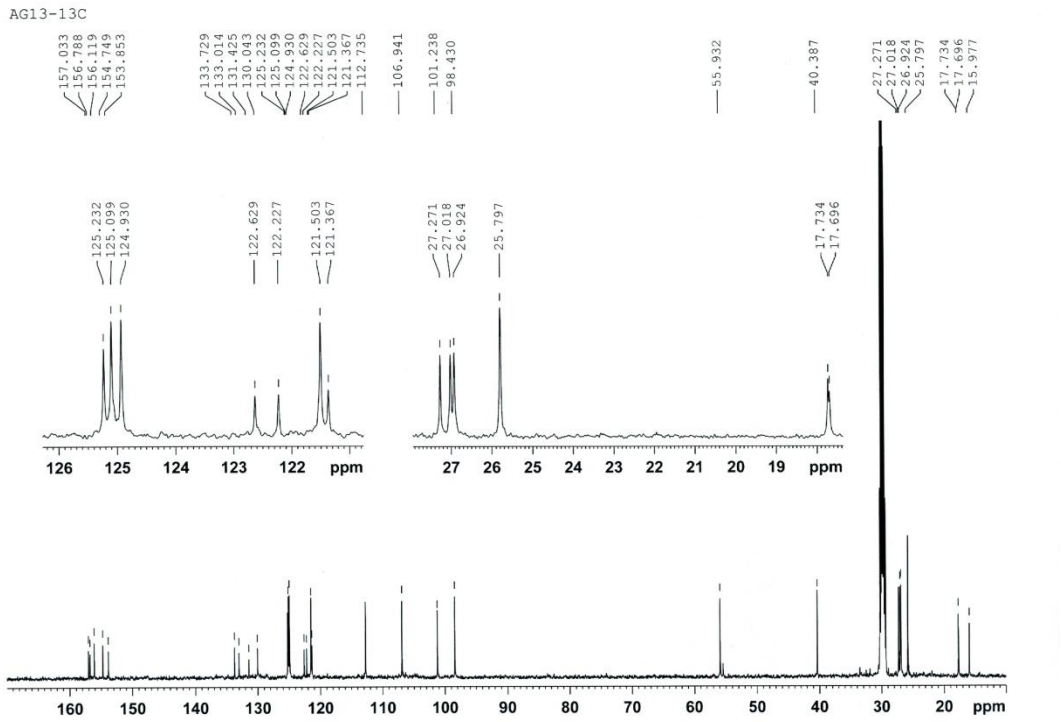

Figure S2. ^{13}C NMR spectrum of **1** (125 MHz) in acetone-d_6

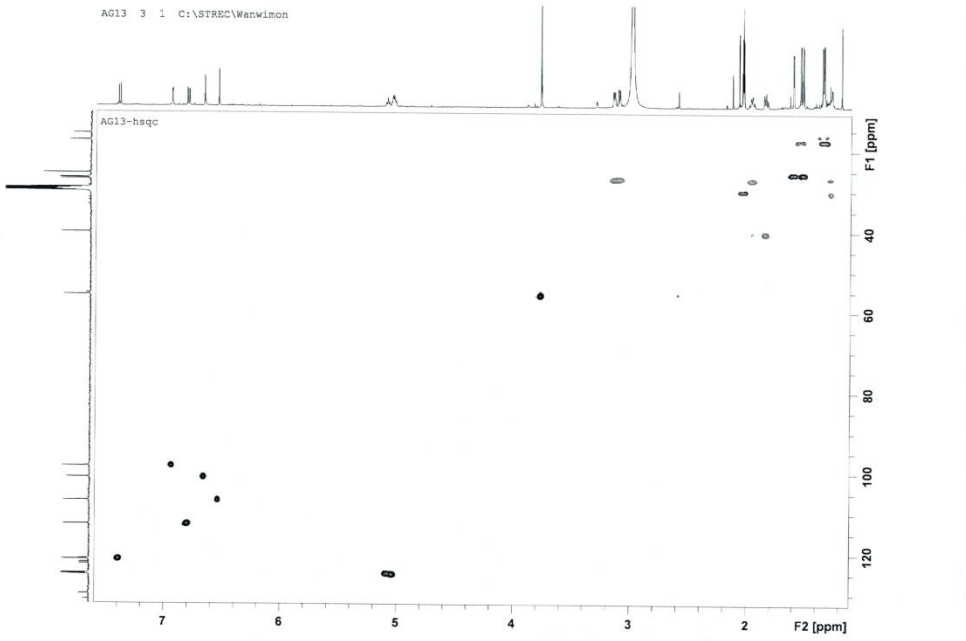

Figure S3. HSQC spectrum of **1** in acetone-d_6

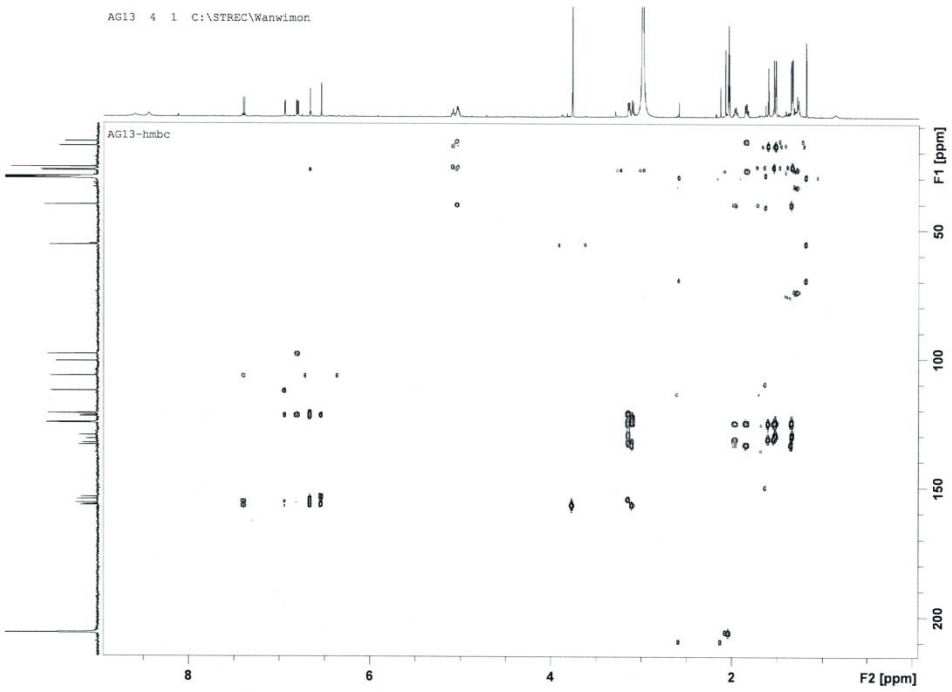

Figure S4. HMBC spectrum of **1** in acetone-d_6

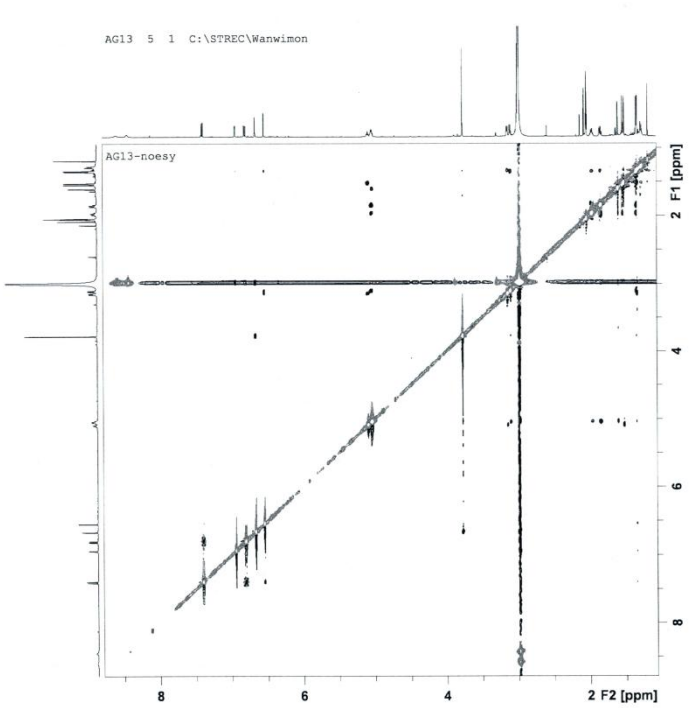

Figure S5. NOESY spectrum of **1** in acetone-d_6

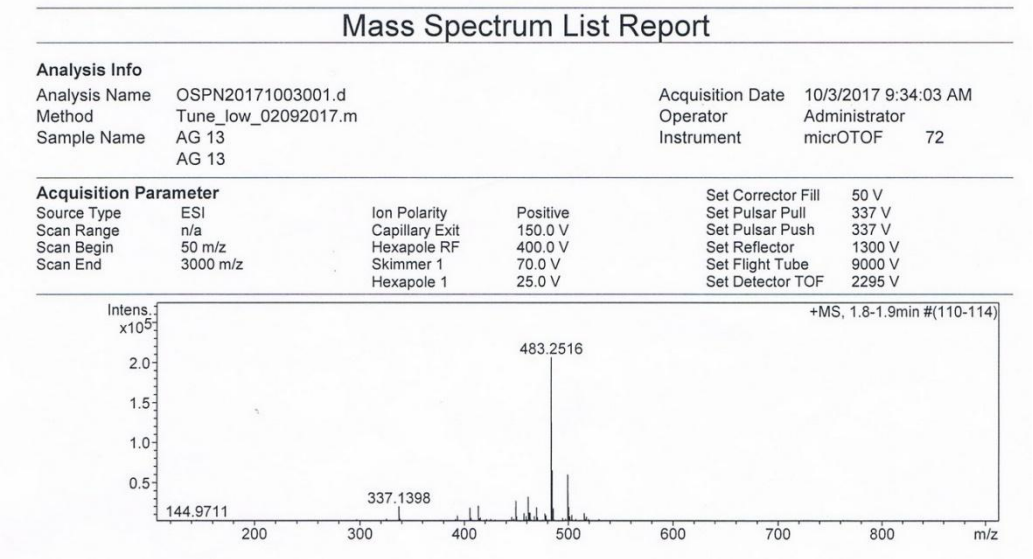

Figure S6. HRESIMS spectrum of **1**

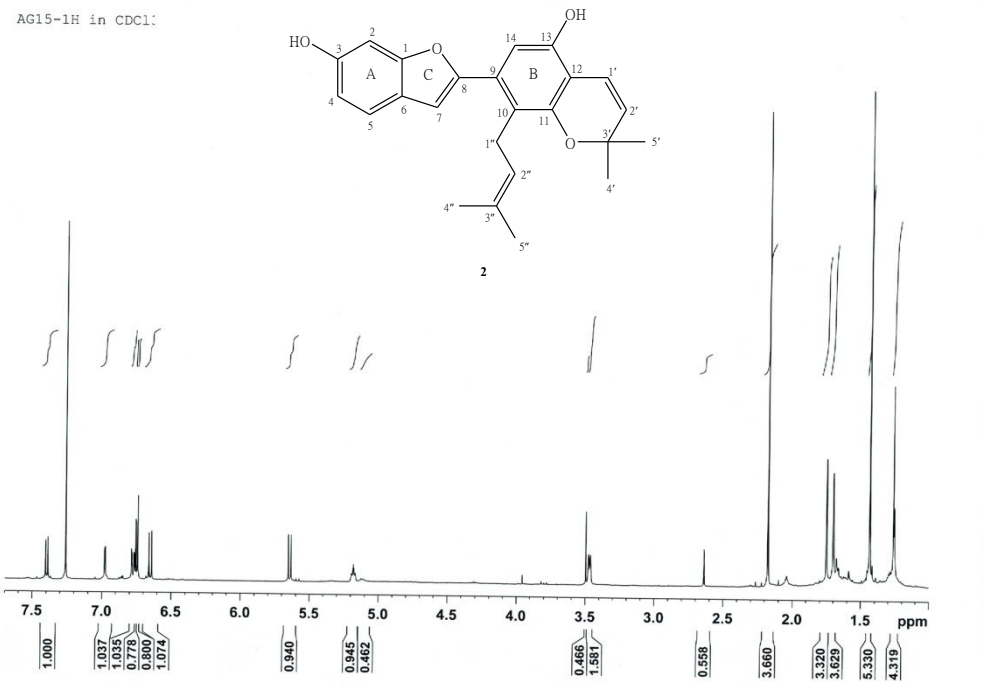

Figure S7. ^{1}H NMR spectrum of **2** (500 MHz) in $CDCl_3$

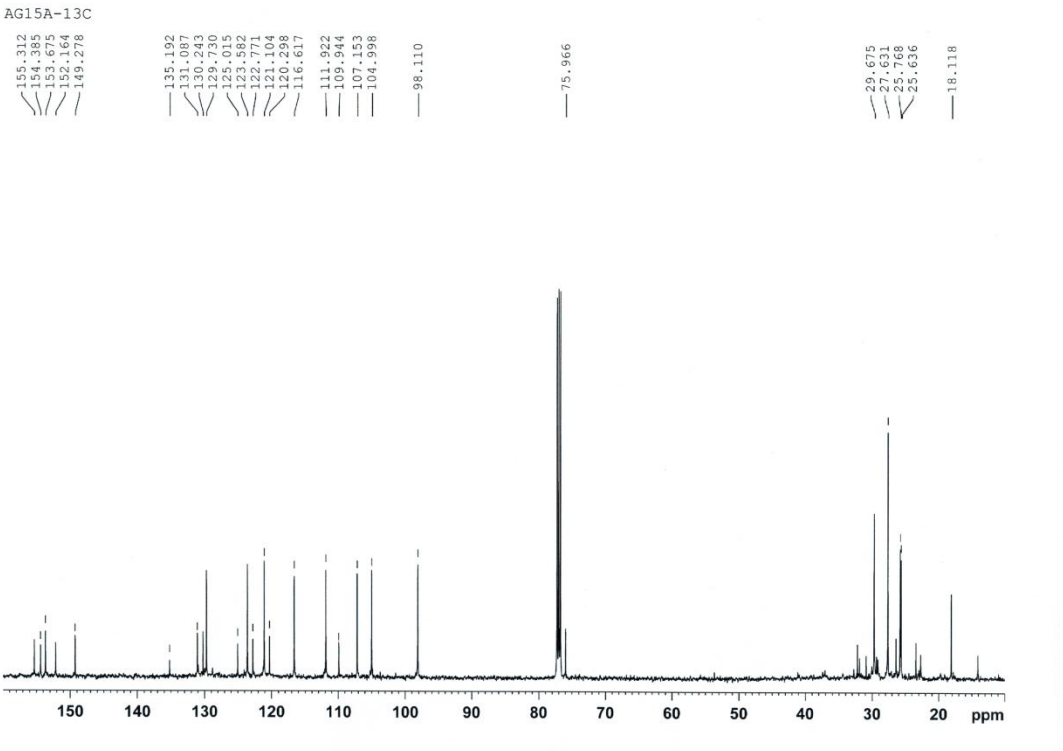

Figure S8. ^{13}C NMR spectrum of **2** (125 MHz) in $CDCl_3$

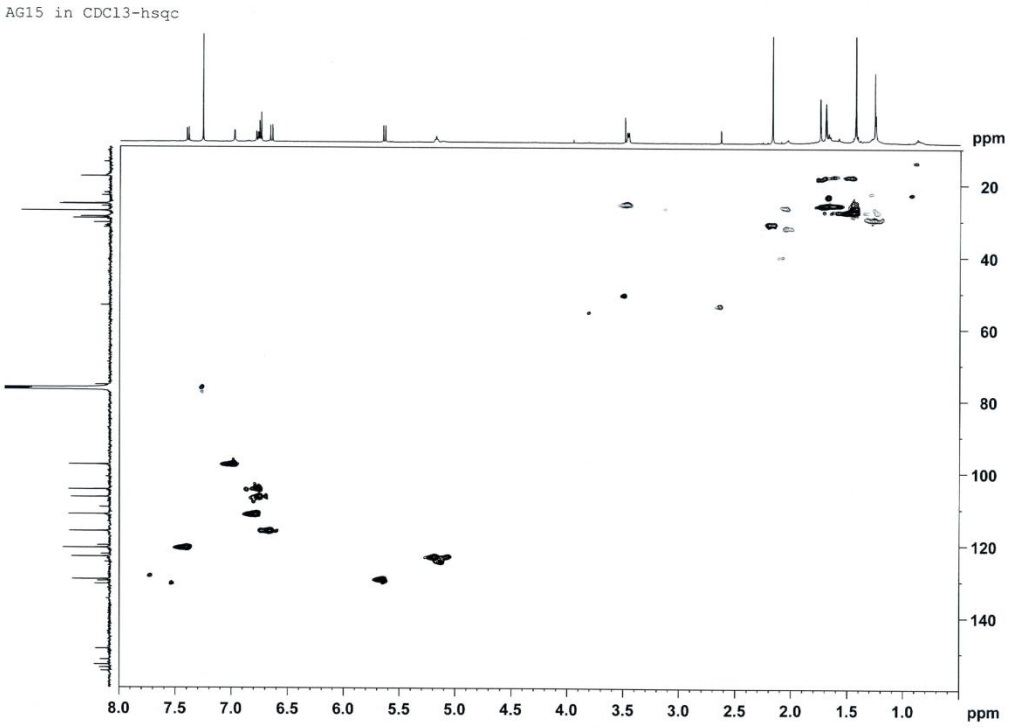

Figure S9. HSQC spectrum of **2** in $CDCl_3$

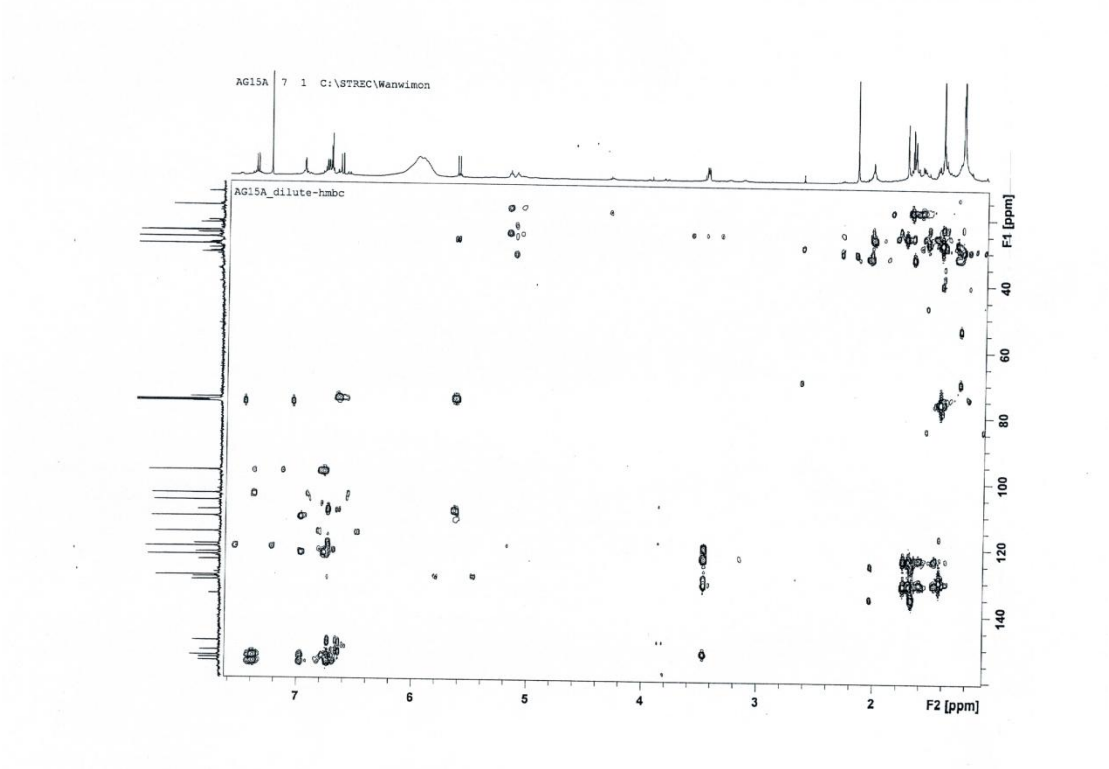

Figure S10. HMBC spectrum of **2** in $CDCl_3$

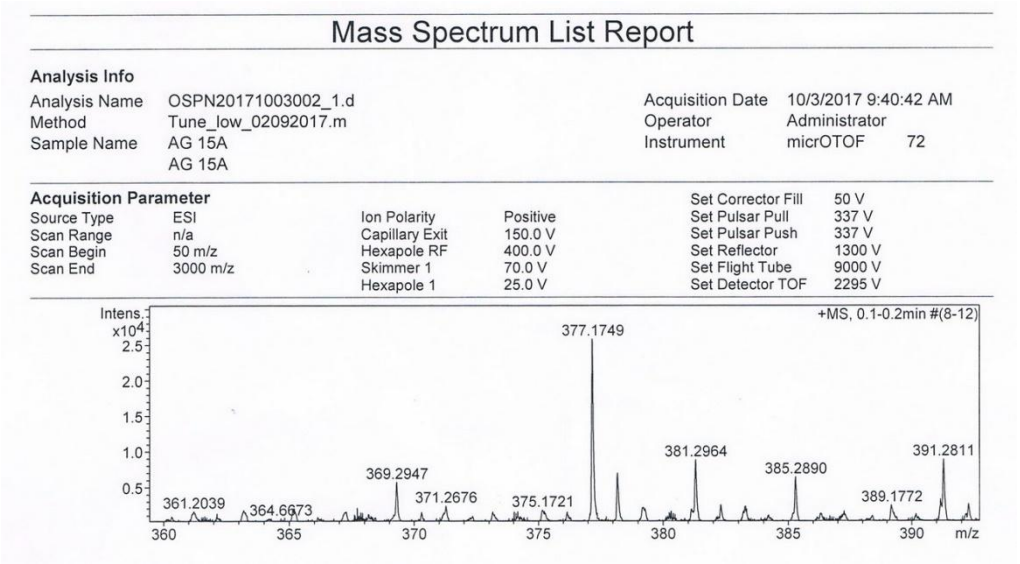

Figure S11. HRESIMS spectrum of **2**

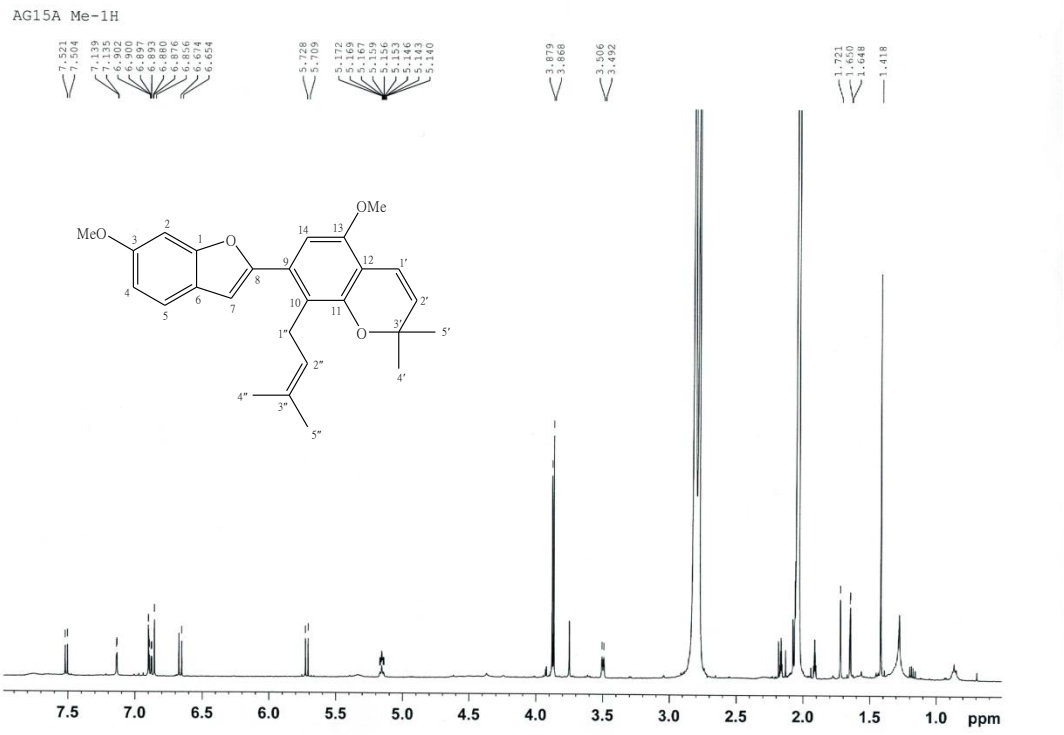

Figure S12. ^{1}H NMR spectrum of **2a** (500 MHz) in acetone-d_6

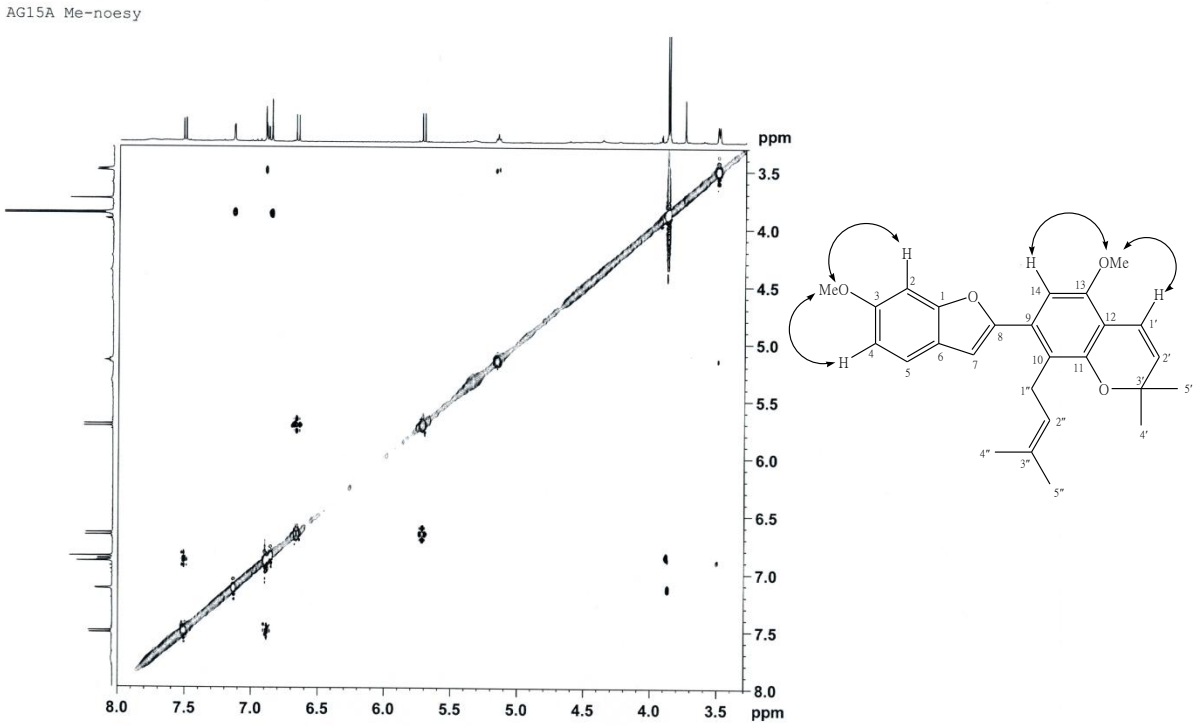

Figure S13. NOESY spectrum of **2a** in acetone-d_6

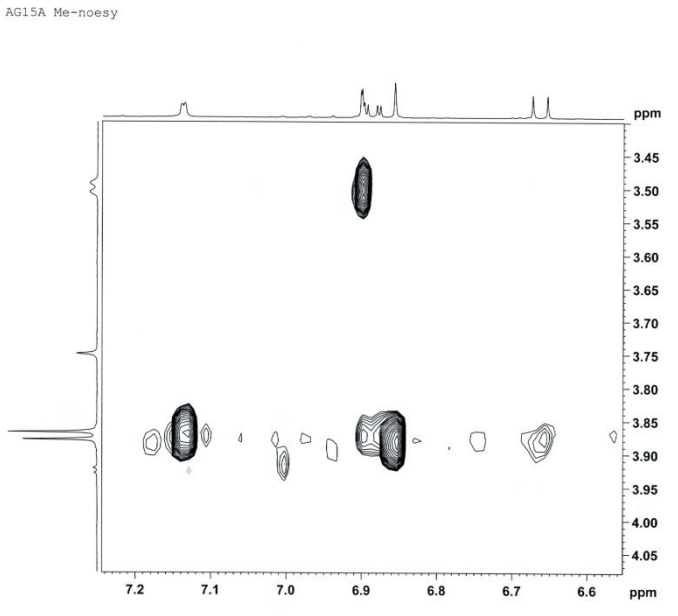

Figure S14. NOESY spectrum (expanded) of **2a** in acetone-d_6

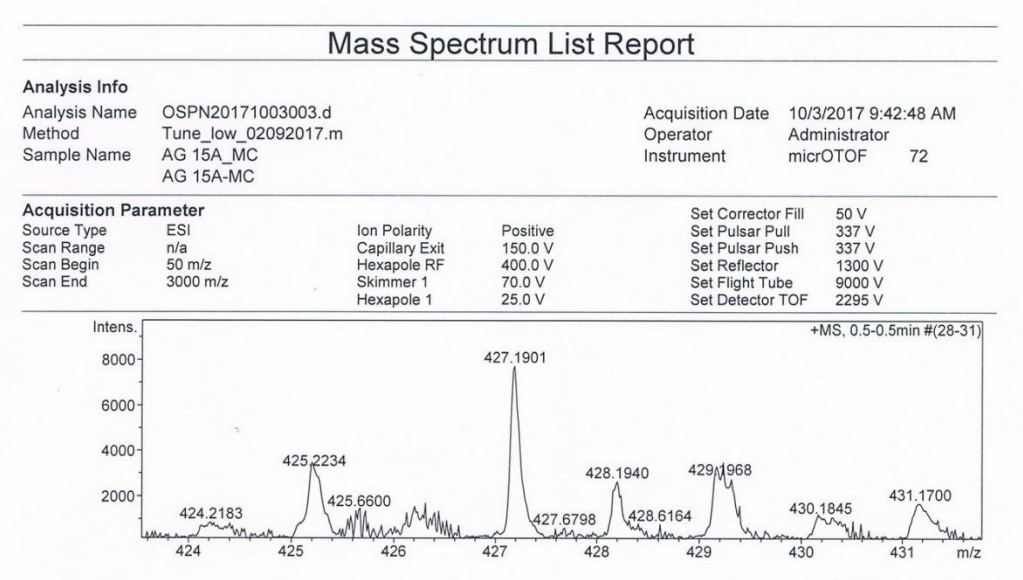

Figure S15. HRESIMS spectrum of **2**a