Supporting Information

New Benzoaldehyde and Benzopyran Compounds from the Endophytic Fungus *Paraphaeosphaeria* sp. F03 and Their Antimicrobial and Cytotoxic Activities

Marcelo R. de Amorim¹, Felipê Hilário¹, Fernando M. dos Santos Junior³, João M. Batista Junior³, Tais M. Bauab², Angela R. Araújo¹, Iracilda Z. Carlos², Wagner Vilegas⁵, Lourdes C. dos Santos¹

Affiliation

¹ Institute of Chemistry, São Paulo State University (Unesp), Araraquara, SP, Brazil
² School of Pharmaceutical Sciences, São Paulo State University (Unesp), Araraquara, SP, Brazil
³ Department of Chemistry, Federal University of São Carlos (UFSCar), São Carlos, SP, Brazil
⁴ Institute of Science and Technology, Federal University of São Paulo (UNIFESP), São José dos Campos, SP, Brazil
⁵ Institute of Biosciences, São Paulo State University (Unesp), São Vicente, SP, Brazil

Correspondence

*Prof. Dr. Lourdes Campaner dos Santos*
Institute of Chemistry
São Paulo State University (Unesp)
14800-900 Araraquara, SP, Brazil
Phone: +55 16 3301 9792
loursant@gmail.com

* Dedicated to Professor Dr. Cosimo Pizza 70th birthday in recognition of his outstanding contribution to natural product research.
**Fig. 1S.** $^1$H NMR spectrum (600 MHz, CDCl$_3$) of compound 1.

**Fig. 2S.** $^{13}$C NMR spectrum (150 MHz, CDCl$_3$) of compound 1.

**Fig. 3S.** HSQC spectrum ($^1$H: 600 MHz, $^{13}$C: 150 MHz, CDCl$_3$) of compound 1.
**Fig. 4S.** HMBC spectrum (\(^1\)H: 600 MHz, \(^{13}\)C: 150 MHz, CDCl\(_3\)) of compound 1.

**Fig. 5S.** HRMS spectrum of compound 1.

**Fig. 6S.** NOESY 1D of compound 1. \(^1\)H NMR spectrum (A), irradiation at δ 3.80 (B) and irradiation at δ 3.97 (C) (600 MHz, CDCl\(_3\)).
**Fig. 7S.** $^1$H NMR spectrum (600 MHz, CDCl$_3$) of compound 2.

**Fig. 8S.** $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 2.

**Fig. 9S.** $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 2.
Fig. 10S. $^{13}$C NMR spectrum (150 MHz, CDCl$_3$) of compound 2.

Fig. 11S. HSQC spectrum ($^1$H: 600 MHz, $^{13}$C: 150 MHz, CDCl$_3$) of compound 2.

Fig. 12S. HMBC spectrum ($^1$H: 600 MHz, $^{13}$C: 150 MHz, CDCl$_3$) of compound 2.
Fig. 13S. HRMS spectrum of compound 2.

Fig. 14S. NOESY 1D of compound 2. $^1$H NMR spectrum (A), irradiation at $\delta$ 10.25 and $\delta$ 10.26 (B) and irradiation at $\delta$ 4.07 (C) (600 MHz, CDCl$_3$).

Fig. 15S. $^1$H NMR spectrum (600 MHz, CD$_3$OD) of compound 3.
Fig. 16S. HSQC spectrum (\textsuperscript{1}H: 600 MHz, \textsuperscript{13}C: 150 MHz, CD\textsubscript{3}OD) of compound 3.

Fig. 17S. HMBC spectrum (\textsuperscript{1}H: 600 MHz, \textsuperscript{13}C: 150 MHz, CD\textsubscript{3}OD) of compound 3.

Fig. 18S. HRMS spectrum of compound 3.
Fig. 19S. NOESY 1D of compound 3. $^1$H NMR spectrum (A), irradiation at $\delta$ 3.82 (B) (600 MHz, CD$_3$OD).

Fig. 20S. $^1$H NMR spectrum (600 MHz, CDCl$_3$) of compound 4.

Fig. 21S. $^{13}$C NMR spectrum (150 MHz, CDCl$_3$) of compound 4.
Fig. 22S. HSQC spectrum (\(^1\)H: 600 MHz, \(^{13}\)C: 150 MHz, CDCl\(_3\)) of compound 4.

Fig. 23S. HMBC spectrum (\(^1\)H: 600 MHz, \(^{13}\)C: 150 MHz, CDCl\(_3\)) of compound 4.

Fig. 24S. HRMS spectrum of compound 4.
Fig. 25S. NOESY 1D of compound 4. $^1$H NMR spectrum (A), irradiation at $\delta$ 5.61 (B) and irradiation at $\delta$ 3.85 (C) (600 MHz, CDCl$_3$).

Fig. 26S. $^1$H NMR spectrum (600 MHz, CDCl$_3$) of compound 5.

Fig. 27S. $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 5.
Fig. 28S. $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 5.

Fig. 29S. $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 5.

Fig. 30S. $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 5.
Fig. 31S. $^1$H NMR spectrum expansion (600 MHz, CDCl$_3$) of compound 5.

Fig. 32S. $^{13}$C NMR spectrum (150 MHz, CDCl$_3$) of compound 5.

Fig. 33S. HSQC spectrum ($^1$H: 600 MHz, $^{13}$C: 150 MHz, CDCl$_3$) of compound 5.
Fig. 34S. HMBC spectrum (¹H: 600 MHz, ¹³C: 150 MHz, CDCl₃) of compound 5.

Fig. 35S. COSY spectrum of compound 5.

Fig. 36S. HRMS spectrum of compound 5.
Fig. 37S. $^1$H NMR spectrum (600 MHz, CD$_3$OD) of compound 6.

Fig. 38S. $^{13}$C NMR spectrum (150 MHz, CD$_3$OD) of compound 6.

Fig. 39S. HSQC spectrum ($^1$H: 600 MHz, $^{13}$C: 150 MHz, CD$_3$OD) of compound 6.
Fig. 40S. HMBC spectrum (\(^1\)H: 600 MHz, \(^{13}\)C: 150 MHz, CD\(_3\)OD) of compound 6.

Fig. 41S. HRMS spectrum of compound 6.

Fig. 42S. NOESY 1D of compound 6. \(^1\)H NMR spectrum (A), irradiation at \(\delta\) 5.85 (B) and irradiation at \(\delta\) 3.98 (C) (600 MHz, CD\(_3\)OD).
Fig. 43S. Chromatogram showing the separation of racemic mixture of compound 6, monitored at 330 nm using Chiralcel OD-RH column. The mobile phase consisted of MeOH/water (8:2, v/v) in isocratic elution. Flow rate was 0.5 mL/min and sample injection of 10 µL.

Fig. 44S. Chromatogram showing the separation of racemic mixture of compound 6 monitored with CD detector at 330 nm and their CD spectra in MeOH/water (8:2, v/v) on the Chiralcel OD-RH column with flow rate of 0.5 mL/min.
Fig. 45S. Alignment of the target strain (F03) with the database in the ITS region, resulting in the identification of the endophyte with 96% of similarity as *P. sporulosa*.

Fig. 46S. *Paraphaeosphaeria* sp. F03 (*P. sporulosa*). Colony on PDA (left), also showing reverse on the right.

Fig. 47S. Chromatogram of EtOAc extract from *Paraphaeosphaeria* sp. F03 by HPLC-DAD detected at 254, 270, 290, 310, and 330 nm. Bold numbers in chromatogram refer to isolated compounds 1–6. (Knauer Europher II RP18 with 250 × 4.6 mm, 5 µm, flow rate of 1.0 mL/min). MeOH (B) and water (A), gradient mode of 35–100% B in 50 min. Injection volume of 20 µL and sample concentration of 10 mg/mL.
Fig. 48S. UV spectra of isolated compounds 1–6 present in the crude extract from *Paraphaeosphaeria* sp. F03 by HPLC-DAD.

Fig. 49S. Dose-response curve of compound 6 to MCF-7 and LM3 tumor cells.