Supplementary Information

First Asymmetric Reduction of Isatin by Marine-Derived Fungi

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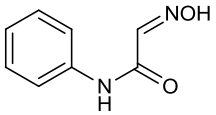
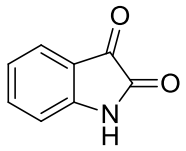
Spectral data

2-(Hydroxyimino)-*N*-phenylacetamide



^{1}H NMR (200 MHz, $CDCl_3$ + DMSO-d_6) δ_H 6.45 (t, 1H, *J* 8.0 Hz), 6.67 (t, 2H, *J* 8.0 Hz), 6.69 (s, 1H), 7.01 (d, 2H, *J* 8.0 Hz), 9.09 (s, 1H), 11.39 (s, 1H); ^{13}C NMR (50 MHz, DMSO-d_6) δ_C 118.7, 122.6, 127.3, 136.8, 142.5, 159.2.

Isatin **1**



^{1}H NMR (200 MHz, DMSO) δ_H 6.89 (d, 1H, *J* 8 Hz), 7.04 (td, 1H, *J* 2 and 8 Hz), 7.48 (d, 1H, *J* 8 Hz), 7.57 (td, 1H, *J* 2 and 8 Hz), 11.03 (s, 1H); ^{13}C NMR (50 MHz, DMSO) δ_C 112.8, 118.3, 123.3, 125.2, 138.9, 151.3, 159.9, 184.9; GC-MS (EI) *m/z* 147 (60), 119 (100), 92 (95), 64 (45), 50 (32).

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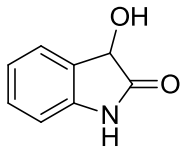
†This paper is dedicated to the memory of our wonderful Professor Angelo da Cunha Pinto.

Dioxindole **2**



^{1}H NMR (500 MHz, DMSO-d_6) δ_H 4.83 (s, 1H), 6.16 (s, 1H), 6.57-6.87 (m, 2H), 6.93 (t, 1H, *J* 10 Hz), 7.06-7.16 (m, 1H), 10.22 (s, 1H); ^{13}C NMR (125 MHz, DMSO-d_6) δ_C 69.2, 109.48, 121.50, 124.78, 128.93, 129.32, 142.19, 177.9; GC-MS (EI) *m/z* 149 (70), 121 (30), 105 (10), 93 (100), 51 (30).

NMR spectra

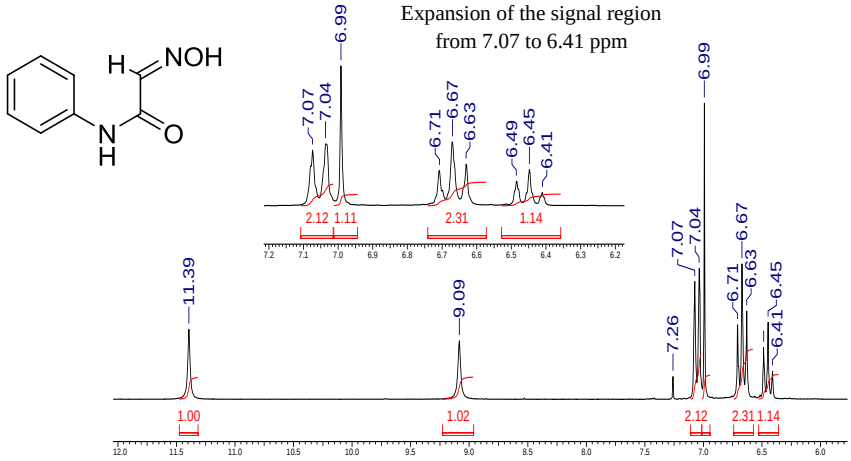


Figure S1. Spectrum of ^{1}H NMR (200 MHz, $CDCl_3$ + DMSO-d_6) of the isonitrosoacetanilide.

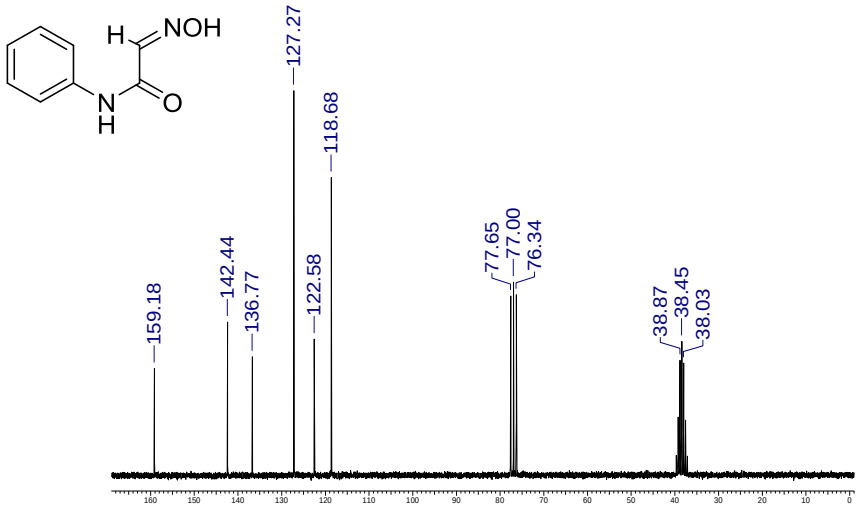


Figure S2. Spectrum of ^{13}C NMR (50 MHz, $CDCl_3$ + DMSO-d_6) of the isonitrosoacetanilide.

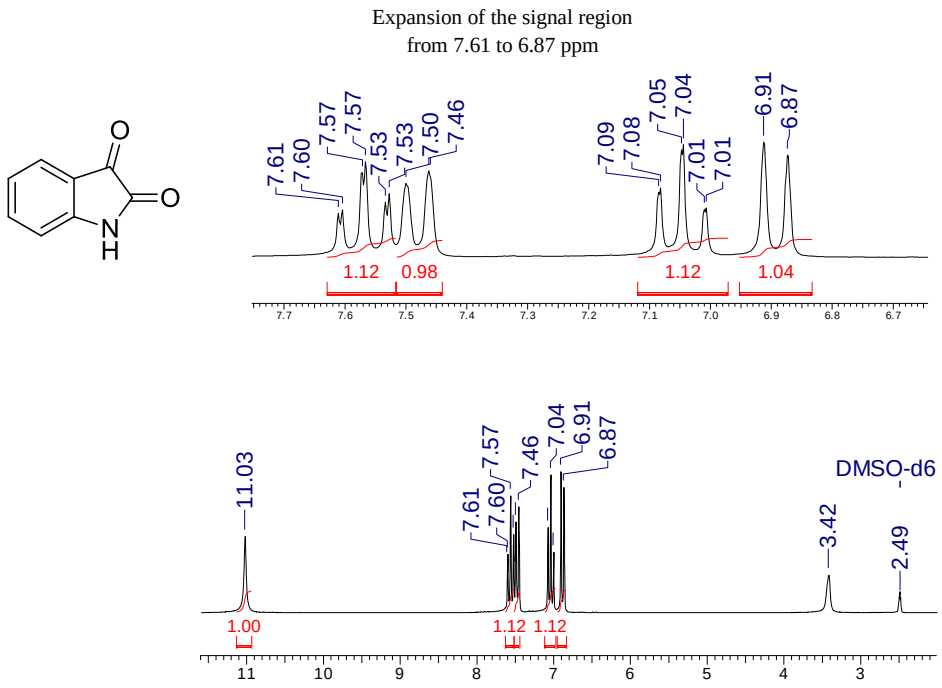


Figure S3. Spectrum of ^{1}H NMR (200 MHz, DMSO) of the isatin.

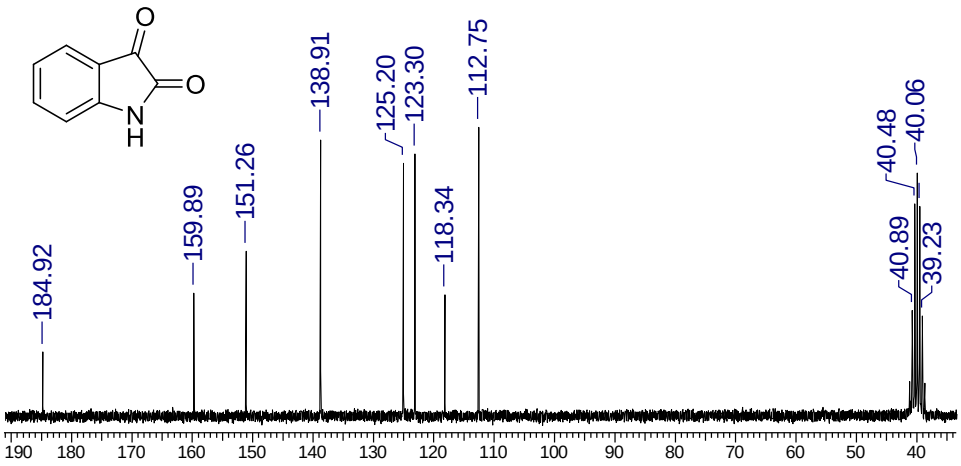


Figure S4. Spectrum of ^{13}C NMR (50 MHz, DMSO-d_6) of the isatin.

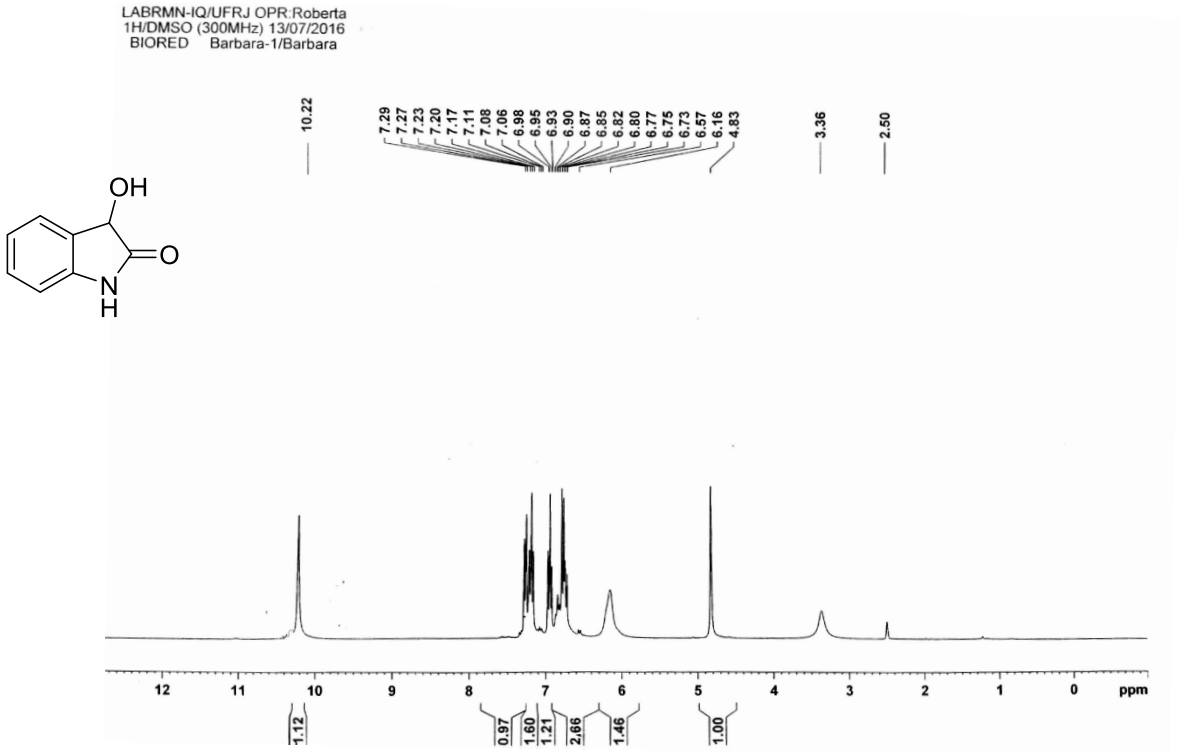


Figure S5. Spectrum of ^{1}H NMR (500 MHz, DMSO) of the dioxindole.

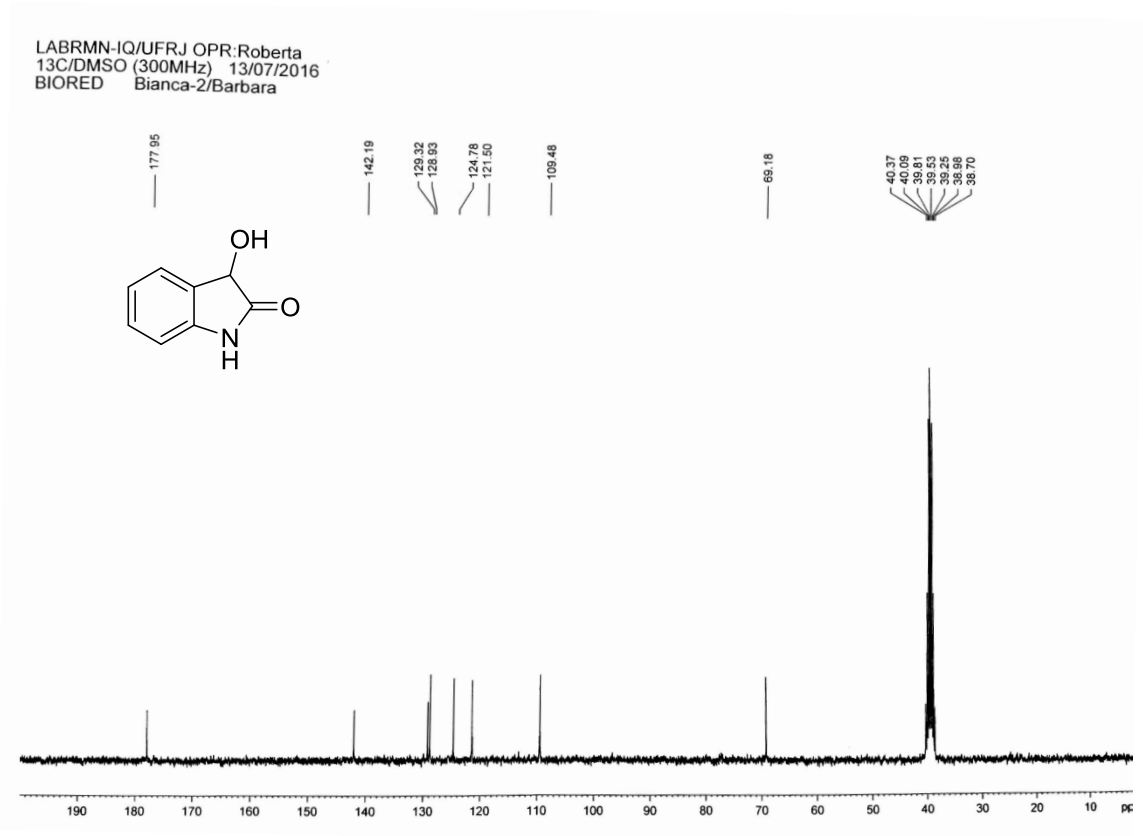


Figure S6. Spectrum of ^{13}C NMR (125 MHz, DMSO) of the dioxindole.

Chromatographic analysis

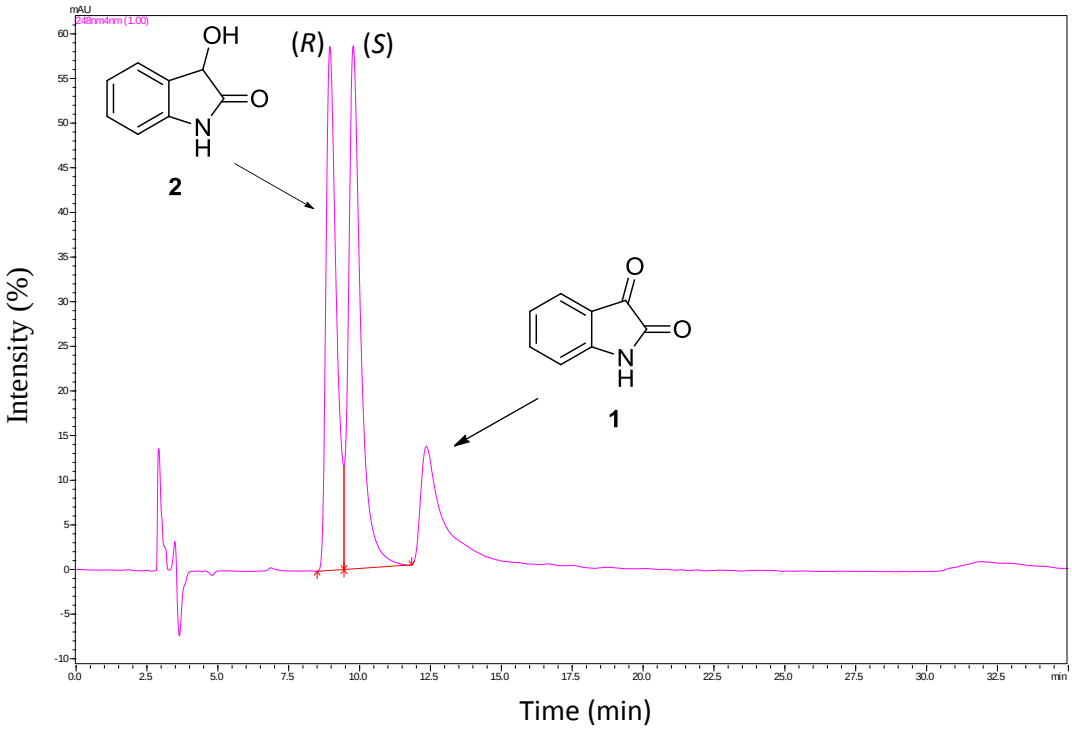


Figure S7. Chromatogram obtained by HPLC of dioxindole racemic **2** and isatin **1** standard. Retention time; (*R*)-**2** = 9.2 min; (*S*)-**2** = 9.8 min; isatin = 12.5 min.

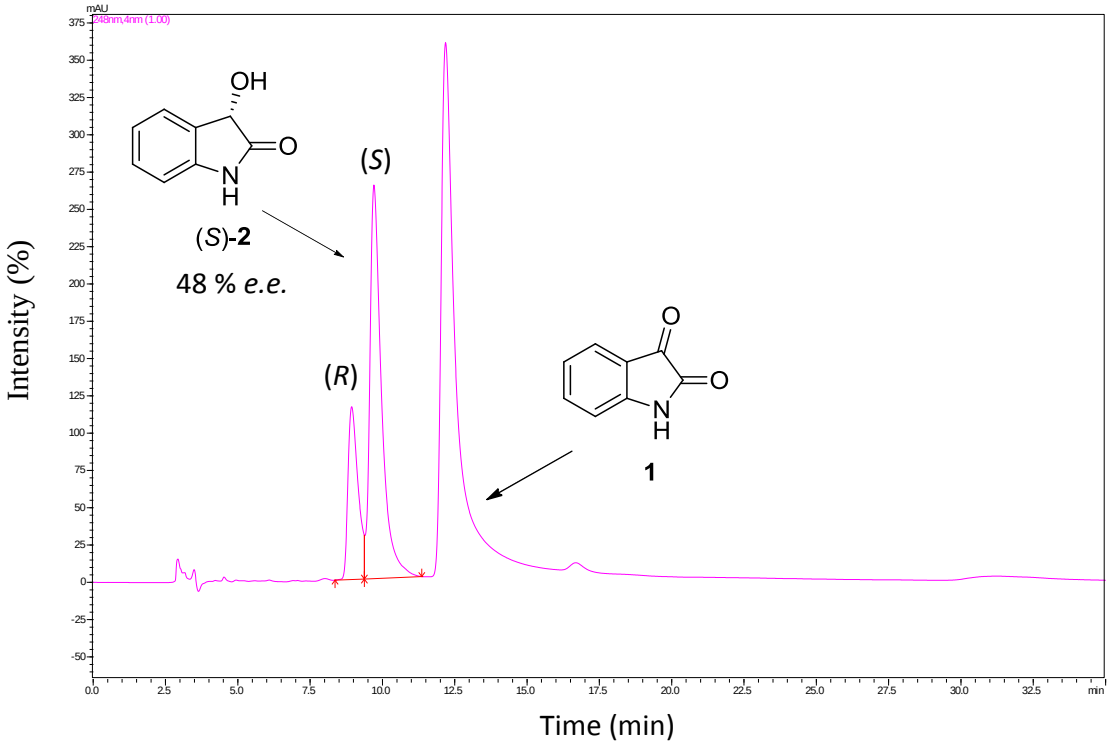


Figure S8. Chromatogram obtained by HPLC of (*S*)-**2** and isatin **1** of the reaction with marine-derived fungi *Acremonium* sp. CBMAI 1676. Retention time; (*R*)-**2** = 9.2 min; (*S*)-**2** = 9.8 min; isatin = 12.5 min.

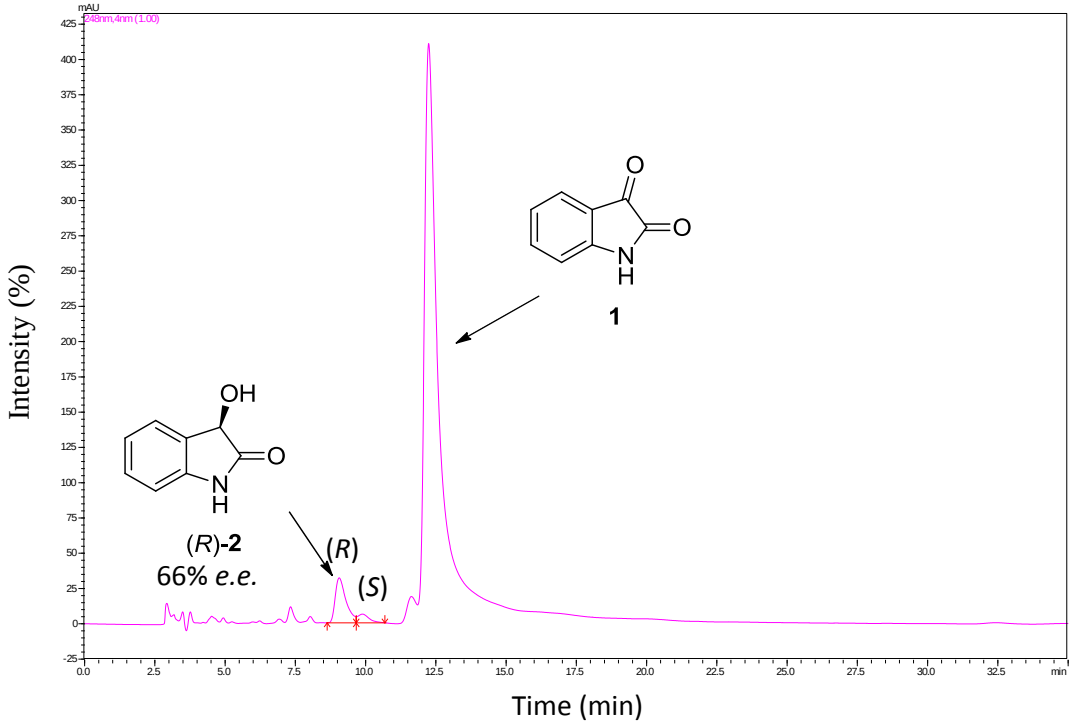


Figure S9. Chromatogram by HPLC of (*S*)-**2** and isatin **1** of the reaction of *A. sydowii* CBMAI 935. Retention time; (*R*)-**2** = 9.2 min; (*S*)-**2** = 9.8 min; isatin = 12.5 min.

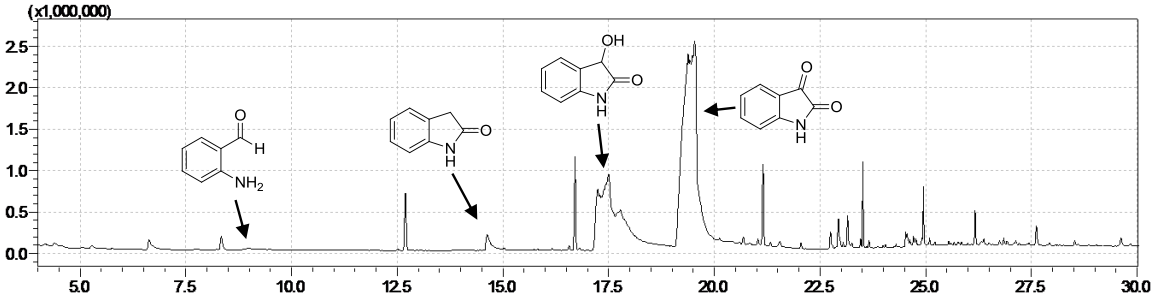


Figure S10. Chromatogram obtained by GC-MS (70 eV) of biotransformation reaction of compound **1** by *Acremonium* sp. CBMAI 1676 in 2% malt medium for 3 days.

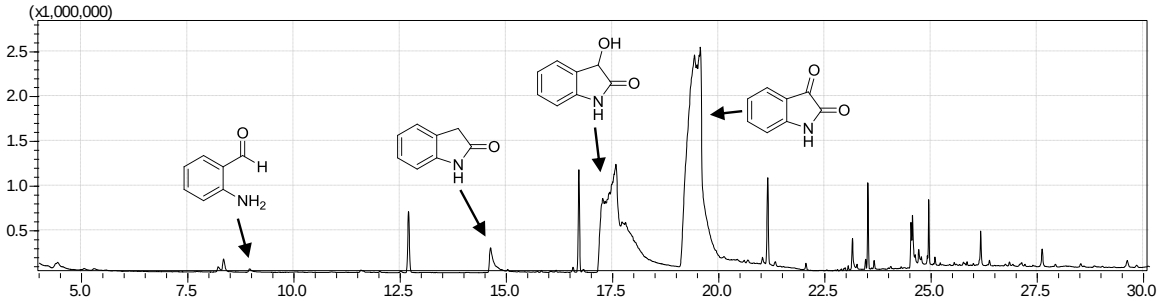
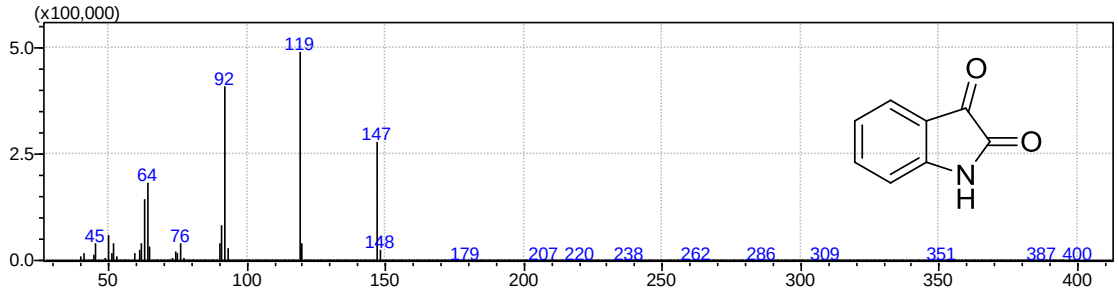


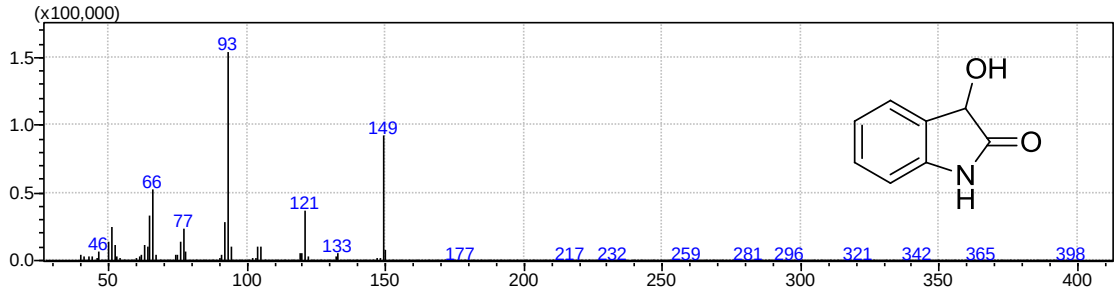
Figure S11. Chromatogram obtained by GC-MS (70 eV) of biotransformation reaction of compound **1** by *A. sydowii* CBMAI 935 in 2% malt medium for 3 days.

Mass spectrum analysis

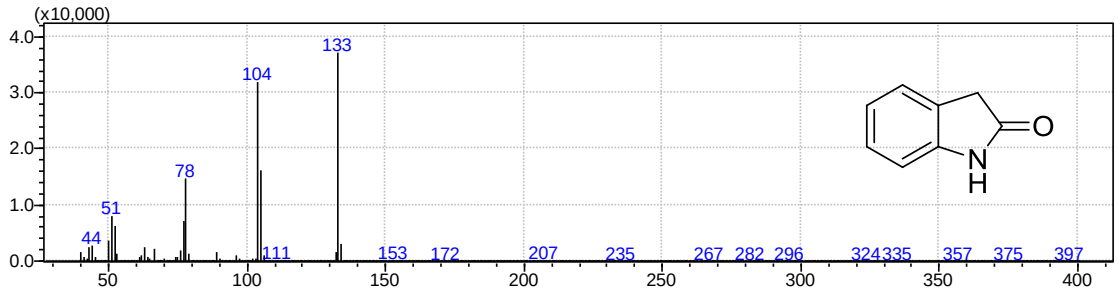
(A)



(B)



(C)



(D)

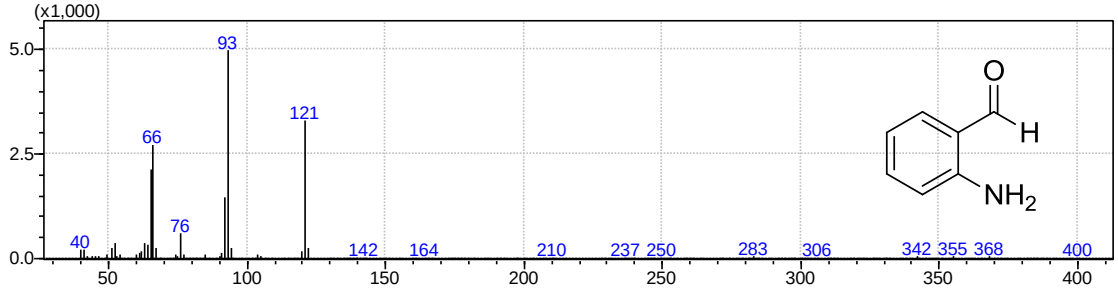


Figure S12. Mass spectrum (70 eV) of the (A) isatin **1** (96% similarity) biotransformation to (B) dioxindole **2** (87% similarity), (C) indolin-2-one **3** (90% similarity) and (D) 2-aminobenzaldehyde **4** (92% similarity) by *Acremonium* sp. CBMAI 1676.