

Supplementary Information

Quantitative profiling of sphingolipids in wild Cordyceps and its mycelia by using UHPLC-MS

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Table S1. Identification of SPLs in wild Cordyceps and its mycelia by using UHPLC-QTOF-MS/MS

| No. | Name | Formula | [M+H] ⁺ (<i>m/z</i>) | Diff (ppm) | Score | RT (min) | ms/ms fragments (<i>m/z</i>) |
|-------------|-------------------------|-------------------|--------------------------------------|---------------|--------------|--------------|---|
| IS-1 | So (d17:1) | C17H35NO2 | 286.2740 | 0.06 | 99.70 | 6.37 | 268.2627, 250.2545 |
| 1 | So (d14:2) | C14H27NO2 | 242.2111 | -0.82 | 83.88 | 3.76 | 224.1996, 206.1895, 194.1887, 60.0440 |
| 2 | So (d14:1) | C14H29NO2 | 244.2270 | -1.34 | 81.57 | 5.30 | 226.1296, 60.0436 |
| 3 | So (d16:1) | C16H33NO2 | 272.2578 | -2.50 | 91.98 | 5.95 | 254.2414, 236.2334, 60.0443 |
| 4 | So (d17:2) | C17H33NO2 | 284.2583 | 1.30 | 49.53 | 7.11 | 266.2485 |
| 5 | So (d18:2) | C18H35NO2 | 298.2742 | -3.82 | 83.03 | 9.10 | 280.2652, 60.0448 |
| 6 | So (d18:1) | C18H37NO2 | 300.2898 | -0.05 | 99.57 | 8.07 | 282.2774, 264.2371, 60.0450 |
| 7 | So (t18:1) | C18H37NO3 | 316.2850 | -1.38 | 82.52 | 6.38 | 298.2727, 280.2623, 262.2517, 250.2525, 60.0446 |
| 8 | So (t18:1) isomer | C18H37NO3 | 316.2847 | -0.28 | 81.81 | 6.90 | 298.2746, 60.0444 |
| 9 | So (d20:1) | C20H41NO2 | 328.3213 | 0.64 | 98.97 | 9.41 | 310.3100 |
| 10 | So (t22:2) | C22H43NO3 | 370.3316 | -0.35 | 98.90 | 7.49 | 352.3225 |
| IS-2 | S1P (d17:1) | C17H36NO5P | 366.2406 | -0.56 | 99.74 | 6.55 | 250.2536 |
| 11 | S1P (d18:1) | C18H38NO5P | 380.2564 | 1.20 | 82.71 | 9.03 | 362.3209, 264.2659 |
| 12 | S1Po (d18:1)* | C23H49N2O5P | 467.3597 | -5.08 | 74.93 | 6.55 | 449.3489, 184.0734 |
| IS-3 | Sa (d17:0) | C17H37NO2 | 288.2898 | -0.09 | 99.29 | 6.57 | 270.2781, 252.2673, 240.2680, 60.0442 |
| 13 | Sa (d16:0) | C16H35NO2 | 274.2740 | -0.68 | 95.38 | 6.24 | 256.2617, 238.2522, 60.0443 |
| 14 | Sa (m18:0) | C18H39NO | 286.3105 | 0.19 | 98.89 | 7.12 | 268.2989 |
| 15 | Sa (d17:0) isomer* | C17H37NO2 | 288.2889 | -3.54 | 95.85 | 5.51 | 270.2784 |
| 16 | Sa (d18:0) | C18H39NO2 | 302.3048 | -1.81 | 46.59 | 6.91 | 284.2926, 266.2819, 254.2842, 60.0439 |
| 17 | Sa (t18:0) | C18H39NO3 | 318.3026 | 7.56 | 84.09 | 6.61 | 300.2883, 282.2782, 264.2683, 270.2782, 252.2670, 60.0442 |
| 18 | Sa (t18:0) isomer | C18H39NO3 | 318.3004 | -0.40 | 99.04 | 6.32 | 300.2888, 288.2772, 270.2790 |
| IS-4 | Cer (d18:1/12:0) | C30H59NO3 | 482.4565 | -1.59 | 92.99 | 10.96 | 464.4431, 446.4281, 434.4308, 282.2786, 264.2678, 252.2671 |
| 19 | Cer (d14:1/22:0) | C36H71NO3 | 566.5468 | -6.53 | 55.89 | 14.64 | 548.5263, 530.5278, 518.5263, 226.2156, |

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|----|-------------------|-----------|----------|-------|-------|-------|--|
| | | | | | | | 208.2054, 196.2049, 60.0442 |
| 20 | Cer (d18:1/2:0)* | C20H39NO3 | 342.3000 | 1.50 | 91.72 | 9.04 | 264.2606 |
| 21 | Cer (d18:1/14:2) | C32H59NO3 | 506.4574 | 0.06 | 93.77 | 11.06 | 282.2837, 264.2675, 60.0617 |
| 22 | Cer (d18:1/14:1) | C32H61NO3 | 508.4715 | -1.59 | 96.56 | 11.15 | 264.2723 |
| 23 | Cer (d18:1/14:0) | C32H63NO3 | 510.4878 | -1.20 | 96.55 | 11.85 | 492.4738, 474.4603, 462.4662, 282.2777, 264.2673, 252.2662, 60.0435 |
| 24 | Cer (d18:1/15:0) | C33H65NO3 | 524.5042 | 0.39 | 97.66 | 12.33 | 506.4927, 488.4815, 282.2796, 264.2687, 252.2678, 60.0444 |
| 25 | Cer (d18:1/16:2) | C34H63NO3 | 534.4880 | 0.38 | 97.77 | 11.84 | 282.2789, 264.2685, 252.2686 |
| 26 | Cer (d18:1/16:1) | C34H65NO3 | 536.5042 | 0.36 | 94.85 | 12.43 | 518.493, 506.4931, 488.4800, 282.2795, 264.2691, 252.2691, 60.0447 |
| 27 | Cer (d18:1/16:0) | C34H67NO3 | 538.5204 | 1.72 | 98.10 | 12.92 | 520.4758, 502.4667, 282.2624, 264.2530, 252.2530, 60.0412 |
| 28 | Cer (d18:1/17:1) | C35H67NO3 | 550.5185 | -0.65 | 98.47 | 13.03 | 300.2898, 282.2742, 264.2661, 60.0437 |
| 29 | Cer (d18:1/18:2) | C36H67NO3 | 562.5183 | -1.90 | 97.30 | 13.45 | 544.5042, 300.2883, 282.2783, 264.2674, 252.2687, 60.0446 |
| 30 | Cer (d18:1/18:1) | C36H69NO3 | 564.5353 | 0.50 | 99.81 | 13.57 | 548.5343, 530.4838, 300.2836, 282.2760, 264.2643, 252.2700, 60.0442 |
| 31 | Cer (d18:1/18:0) | C36H71NO3 | 566.5486 | -2.80 | 67.90 | 14.36 | 548.5343, 518.5343, 282.2788, 264.2708, 252.2720, 60.0450 |
| 32 | Cer (d18:1/20:1) | C38H73NO4 | 592.5713 | 7.76 | 73.80 | 15.86 | 556.5546, 282.2793, 264.2689, 252.2685, 60.0443 |
| 33 | Cer (d18:1/22:0) | C40H79NO3 | 622.6127 | -1.42 | 96.67 | 18.20 | 604.5998, 586.5841, 300.2889, 282.2779, 264.2680, 252.2672, 60.0441 |
| 34 | Cer (d18:1/23:0)* | C41H81NO3 | 636.6274 | -2.36 | 94.37 | 19.10 | 618.6192, 600.6006, 300.2886, 282.2778, 264.2695, 252.2668, 60.0441 |
| 35 | Cer (d18:1/24:0)* | C42H83NO3 | 650.6433 | -2.38 | 94.72 | 20.10 | 632.6333, 614.6204, 300.2887, 282.2806, 264.2690, 252.2727, 60.0441 |
| 36 | Cer (d18:1/25:0) | C43H85NO3 | 664.6585 | -3.59 | 74.25 | 19.25 | 300.2901, 282.2772, 264.2687, 252.2648, |

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|----|----------------------|-----------|----------|-------|-------|-------|---|
| | | | | | | | 60.0434 |
| 37 | Cer (d18:1/26:1) | C44H85NO3 | 676.6589 | -2.30 | 72.91 | 19.23 | 300.2924, 282.2786, 264.2682, 252.2685, 60.0435 |
| 38 | Cer (d18:2/15:0) | C33H63NO3 | 522.4881 | -0.99 | 96.90 | 11.83 | 504.4757, 486.4644, 474.4622, 280.2621, 262.2525, 250.2525, 60.0437 |
| 39 | Cer (d18:2/16:1) | C34H63NO3 | 534.4887 | 1.13 | 46.93 | 11.85 | 516.4747, 280.2627, 262.2520, 250.2527, 60.0448 |
| 40 | Cer (d18:2/16:0) | C34H65NO3 | 536.5047 | 1.63 | 98.33 | 12.38 | 518.5032, 500.4807, 488.4866, 280.2630, 262.2528, 250.2523, 60.0446 |
| 41 | Cer (d18:2/18:1) | C36H67NO3 | 562.5183 | -1.90 | 97.30 | 13.50 | 544.5027, 298.2732, 280.2608, 262.2517, 60.0443 |
| 42 | Cer (d18:2/23:0) | C41H79NO3 | 634.6120 | -2.61 | 90.40 | 18.18 | 616.6017, 598.6093, 298.2733, 280.2624, 262.2523, 250.2508, 60.0446 |
| 43 | Cer (d18:2/24:0)* | C42H81NO3 | 648.6282 | -1.20 | 96.21 | 19.06 | 630.6151, 612.5993, 298.2729, 280.2626, 262.2522, 250.2522, 60.0443 |
| 44 | Cer (d19:2/16:0) | C35H67NO3 | 550.5180 | -2.66 | 95.77 | 12.76 | 532.5053, 514.4940, 502.4963, 294.2781, 276.2676, 264.2679, 60.0441 |
| 45 | Cer (d18:1/16:1(OH)) | C34H65NO4 | 552.4987 | 0.18 | 93.34 | 12.32 | 534.4662, 516.4655, 282.2793, 264.2690, 252.2664, 60.0434 |
| 46 | Cer (d18:1/16:0(OH)) | C34H67NO4 | 554.5137 | -1.09 | 98.26 | 12.40 | 536.4763, 518.4844, 500.4834, 318.2981, 300.2877, 282.2777, 264.2676, 252.2678, 60.0442 |
| 47 | Cer (d18:1/17:1(OH)) | C35H67NO4 | 566.5138 | -0.88 | 97.50 | 15.36 | 548.5389, 530.5290, 300.2885, 282.2786, 264.2678, 252.2676, 60.0442 |
| 48 | Cer (d18:1/18:1(OH)) | C36H69NO4 | 580.5215 | 1.79 | 89.58 | 14.53 | 562.5497, 532.3500, 282.2766, 264.2688, 252.2640, 60.0421 |
| 49 | Cer (d18:1/18:0(OH)) | C36H71NO4 | 582.5455 | 0.20 | 85.70 | 13.55 | 564.2850, 534.1585, 282.2805, 264.2682, 252.2677, 60.0442 |
| 50 | Cer (d18:1/19:1(OH)) | C37H71NO4 | 594.5424 | -4.67 | 81.99 | 12.55 | 282.2656, 264.2670, 252.2348, 60.0452 |

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|----|-----------------------|-----------|----------|-------|-------|-------|---|
| 51 | Cer (d18:1/22:0(OH))* | C40H79NO4 | 638.6089 | 1.10 | 98.65 | 17.11 | 620.5936, 602.5772, 300.2884, 282.2769, 264.2676, 252.2644, 60.0443 |
| 52 | Cer (d18:2/16:0(OH)) | C34H65NO4 | 552.4991 | 0.91 | 84.54 | 11.84 | 534.4955, 516.4797, 298.2779, 280.2621, 262.2527, 250.2495, 60.0449 |
| 53 | Cer (d18:2/18:1(OH)) | C36H67NO4 | 578.5137 | -1.04 | 88.31 | 11.52 | 560.5017, 542.4887, 524.4798, 512.4791, 316.2824, 298.2728, 280.2623, 262.2518, 250.2508, 60.0441 |
| 54 | Cer (d19:2/16:0(OH)) | C35H67NO4 | 566.5167 | 3.22 | 90.99 | 12.20 | 566.5060, 548.5021, 530.4916, 294.2780, 276.2684, 264.2693, 60.0436 |
| 55 | Cer (d18:0/15:0)* | C33H67NO3 | 526.5185 | -1.58 | 49.26 | 12.75 | 508.5046, 490.4941, 284.2962, 266.2840, 254.2827, 60.0441 |
| 56 | Cer (d18:0/16:1) | C34H67NO3 | 538.5194 | 0.01 | 94.87 | 13.23 | 520.4573, 502.4465, 302.2804, 284.2702, 266.2606, 254.2210, 60.0398 |
| 57 | Cer (d18:0/16:0) | C34H69NO3 | 540.5350 | 0.02 | 47.62 | 13.35 | 522.5168, 504.5167, 302.3034, 284.2930, 266.2819, 254.2848, 60.0442 |
| 58 | Cer (d18:0/18:0) | C36H73NO3 | 568.5660 | -0.53 | 97.48 | 14.63 | 550.5549, 532.5356, 302.3041, 284.2927, 266.2838, 254.2854, 60.0439 |
| 59 | Cer (d18:0/26:0)* | C44H89NO3 | 680.6932 | 2.63 | 95.31 | 20.82 | 662.6779, 644.6688, 302.3044, 284.2943, 266.2837, 254.2835, 60.0443 |
| 60 | Cer (t18:1/18:0) | C36H71NO4 | 582.5454 | -2.78 | 87.05 | 12.99 | 564.5238, 546.5252, 280.2609, 262.2535, 250.2525, 60.044 |
| 61 | Cer (t18:1/22:1)* | C40H77NO4 | 636.5916 | -1.41 | 97.00 | 16.15 | 618.5775, 600.5669, 316.2958, 298.2726, 280.2620, 262.2527, 250.2512, 60.0442 |
| 62 | Cer (t18:1/22:0) | C40H79NO4 | 638.6075 | -1.72 | 95.50 | 15.64 | 620.5942, 602.5830, 584.5657, 316.2827, 298.2730, 280.2626, 262.2522, 250.2507, 60.0443 |
| 63 | Cer (t18:0/16:0) | C34H69NO4 | 556.5283 | -3.49 | 47.41 | 12.28 | 282.2782, 264.2673, 252.2681, 60.0443 |
| 64 | Cer (t18:0/22:1) | C40H79NO4 | 638.6066 | -2.51 | 92.94 | 16.12 | 620.5912, 602.5785, 318.2885, 282.2785, 264.2677, 252.2681, 60.0443 |

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|-------------|----------------------------|------------------|-----------------|--------------|--------------|--------------|---|
| 65 | Cer (t18:0/22:0) | C40H81NO4 | 640.6224 | -2.61 | 95.18 | 16.13 | 622.6117, 604.6000, 318.3000, 300.2895, 282.2789, 264.2680, 252.2677, 60.0445 |
| 66 | Cer (t18:0/24:0) | C42H85NO4 | 668.6558 | 1.30 | 98.39 | 17.45 | 650.6451, 632.6331, 614.6217, 318.3005, 300.2900, 282.2792, 264.2687, 252.2685, 60.0446 |
| 67 | Cer (t18:0/18:0(OH)) | C36H73NO5 | 600.5558 | -1.30 | 96.81 | 12.98 | 582.5451, 564.5357, 546.5223, 534.5204, 318.3015, 300.2895, 282.2799, 264.2693, 252.2686, 60.045 |
| 68 | Cer (t18:0/22:0(OH)) | C40H81NO5 | 656.6183 | -1.13 | 97.91 | 15.48 | 638.6032, 620.5948, 602.5856, 318.2980, 300.2891, 282.2780, 264.2676, 252.2673, 60.0441 |
| 69 | Cer (t18:0/24:0(OH)) | C42H85NO5 | 684.6709 | 3.48 | 52.12 | 16.83 | 666.6481, 648.6362, 630.6249, 612.6156, 318.3042, 300.2934, 282.2830, 264.2720, 252.2713, 60.0454 |
| IS-5 | GlcCer (d18:1/12:0) | C36H69NO8 | 644.5116 | -0.11 | 99.98 | 10.40 | 264.2684, 60.0441 |
| 70 | HexCer (d18:1/16:0)* | C40H77NO8 | 700.5704 | -2.69 | 93.97 | 12.21 | 682.5608, 664.5436, 520.5076, 502.4982, 490.4893, 282.2788, 264.2683, 252.2698, 60.0445 |
| 71 | HexCer (d18:2/16:0) | C40H75NO8 | 698.5573 | 1.27 | 86.87 | 11.52 | 680.5461, 536.5047, 518.4944, 500.4838, 280.2669, 262.2535, 250.2535 |
| 72 | HexCer (d18:2/16:0(OH)) | C40H75NO9 | 714.5522 | 0.55 | 97.12 | 11.25 | 696.5392, 534.4879, 516.4774, 504.477, 280.2636, 262.2532, 250.2534, 60.0455 |
| 73 | HexCer (d19:2/15:0) | C40H75NO8 | 698.5555 | -1.43 | 94.75 | 11.46 | 680.4951, 662.6058, 536.4120, 518.4675, 294.2805, 276.2660, 264.2522, 60.0440 |
| 74 | HexCer (d19:2/16:0(OH)) | C41H77NO9 | 728.5679 | 1.05 | 86.31 | 11.75 | 710.5562, 692.5422, 566.5138, 548.5038, 530.4929, 518.4936, 294.2794, 276.2691, 264.2694, 60.0447 |
| 75 | HexCer (d19:2/17:0(OH))* | C42H79NO9 | 742.5842 | 1.87 | 94.85 | 12.00 | 724.5716, 562.5191, 544.5080, 532.5108, 294.2787, 276.2696, 60.0451 |

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|-------------|--------------------------|--------------------|-----------------|-------------|--------------|--------------|---|
| 76 | HexCer (d19:2/18:0(OH)) | C43H81NO9 | 756.5992 | 0.21 | 96.54 | 12.53 | 738.5863, 576.5335, 558.5236, 546.5249, 294.2788, 276.2689, 264.2686, 60.0447 710.5435, 692.5330, 548.4912, 530.4811, |
| 77 | HexCer (t19:1/16:1) | C41H77NO9 | 728.5678 | 0.82 | 98.38 | 11.20 | 512.4701, 330.2718, 312.2484, 294.2775, 276.2677, 60.0441 |
| IS-6 | SM (d18:1/12:0) | C35H71N2O6P | 647.5119 | 2.88 | 89.65 | 10.37 | 282.2788, 264.2672, 184.0742 |
| 78 | SM (d18:1/14:0) | C37H75N2O6P | 675.5435 | -0.31 | 99.53 | 11.10 | 264.2628, 184.0733 |
| 79 | SM (d18:1/16:0) | C39H79N2O6P | 703.5773 | 3.43 | 87.95 | 12.00 | 264.2723, 184.0738 |
| 80 | SM (d18:1/18:0) | C41H83N2O6P | 731.6061 | 0.01 | 99.51 | 13.25 | 264.2670, 184.0732 |
| 81 | SM (d18:1/20:0) | C43H87N2O6P | 759.6377 | 0.06 | 99.42 | 14.51 | 264.2675, 184.0731 |
| 82 | SM (d18:1/22:0) | C45H91N2O6P | 787.6679 | -1.82 | 93.87 | 15.61 | 264.2642, 184.074 |
| 83 | SM (d18:1/24:0) | C47H95N2O6P | 815.6937 | -7.51 | 66.52 | 16.91 | 264.2616, 184.0717 |
| 84 | SM (d18:1/16:1) | C39H77N2O6P | 701.5586 | -0.56 | 99.03 | 11.66 | 264.2670, 184.0733 |
| 85 | SM (d18:1/20:1) | C43H85N2O6P | 757.6234 | 2.11 | 95.74 | 13.90 | 264.2676, 184.0726 |
| 86 | SM (d18:1/22:1) | C45H89N2O6P | 785.6519 | -2.62 | 85.23 | 15.12 | 264.2686, 184.0741 |
| 87 | SM (d18:2/18:0) | C41H81N2O6P | 729.5895 | -2.38 | 81.30 | 12.75 | 262.2550, 184.0738 |
| 88 | SM (d18:2/18:1) | C41H79N2O6P | 727.5733 | -3.23 | 89.12 | 11.81 | 262.2520, 184.0729 |
| 89 | SM (d18:1/18:1(OH)) | C41H81N2O7P | 745.5853 | -0.49 | 94.97 | 12.38 | 264.2709, 184.0737 |
| 90 | SM (d18:2/16:0(OH)) | C39H77N2O7P | 717.5546 | 0.34 | 70.39 | 11.07 | 262.2531, 184.0738 |
| 91 | SM (d33:1) | C38H77N2O6P | 689.5578 | -1.61 | 93.11 | 11.56 | 184.0728 |
| 92 | SM (d39:2) | C44H87N2O6P | 771.6349 | -4.65 | 72.19 | 14.56 | 184.0726 |
| 93 | SM (d42:2) | C47H93N2O6P | 813.6809 | -5.03 | 78.04 | 16.14 | 184.0734 |
| 94 | SM (d34:0) | C39H81N2O6P | 705.5906 | 0.19 | 99.72 | 12.50 | 184.0732 |
| 95 | SM (d36:0) | C41H85N2O6P | 733.6209 | -1.32 | 96.37 | 13.84 | 184.0734 |
| 96 | SM (d38:0) | C43H89N2O6P | 761.6523 | -1.98 | 91.96 | 14.90 | 184.0728 |
| 97 | PI-Cer (d18:0/16:0(OH))* | C40H80NO12P | 798.5494 | 0.38 | 91.30 | 10.90 | 780.5319, 556.5266, 538.5169, 520.5078, 284.2930, 266.2852, 60.0425 |
| 98 | PI-Cer (t18:0/22:0(OH)) | C46H92NO13P | 898.6364 | -1.67 | 96.77 | 12.84 | 880.6528, 666.6358, 638.6056, 620.5907, 602.4465, 300.2888, 282.2773, 264.2655, |

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| 99 | PI-Cer (t18:0/24:0(OH)) | C48H96NO13P | 926.6692 | 0.01 | 98.13 | 13.95 | 252.2662, 60.0443 908.6490, 684.6483, 666.6362, 648.6261, 630.6105, 300.2882, 282.2777, 264.2674, 252.2677, 60.0442 |
| 100 | MIPC (t18:0/22:0(OH)) | C52H102NO18P | 1060.6880 | -2.55 | 91.03 | 12.60 | 1042.5295, 898.6364, 880.6253, 656.6104, 638.6042, 300.2909, 282.2738, 264.2668, 60.0447 |
| 101 | MIPC (t18:0/24:0(OH)) | C54H106NO18P | 1088.7205 | -1.36 | 95.15 | 13.68 | 926.9604, 666.6345, 648.6163, 300.2877, 282.2777, 264.2664, 60.0445 |

* Sphingolipids were identified from mycelia only.

Table S2. The level of representative markers discriminating wild Cordyceps and its mycelia.

| Group A V.S. Group B | SPLs | VIP | Group A | Group B | <i>p</i> |
|---|-------------------------|------|---------------|---------------|----------|
| Wild Cordyceps V.S. <i>Hirsutella sinensis</i> | HexCer (t19:1/16:1) | 1.38 | 0.715 ±0.120 | 4.416 ±0.619 | 0.0000 |
| | HexCer (d19:2/16:0(OH)) | 1.37 | 0.958 ±0.289 | 5.436 ±0.638 | 0.0000 |
| | So (d18:1) | 1.35 | 0.493 ±0.268 | 3.023 ±0.423 | 0.0000 |
| Wild Cordyceps V.S. <i>Cordyceps sinensis</i> | Sa (d16:0) | 1.41 | 0.013 ±0.013 | 12.732 ±0.724 | 0.0000 |
| | HexCer (d19:2/16:0(OH)) | 1.40 | 0.958 ±0.289 | 10.203 ±1.147 | 0.0000 |
| | PI-Cer (d18:0/16:0(OH)) | 1.40 | 0 | 6.977 ±1.505 | 0.0000 |
| Wild Cordyceps V.S. <i>Cephalosporium sinensis</i> | SM (d18:2/16:0(OH)) | 1.46 | 0.419 ±0.058 | 0.017 ±0.031 | 0.0000 |
| | Cer (d18:1/18:1) | 1.45 | 0.074 ±0.069 | 12.008 ±2.387 | 0.0000 |
| | Cer (d18:0/18:0) | 1.40 | 0.008 ±0.006 | 9.885 ±3.149 | 0.0000 |
| Wild Cordyceps V.S. <i>Mortierella SP</i> | Cer (d18:0/16:1) | 1.41 | 0.031 ±0.025 | 0.616 ±0.110 | 0.0000 |
| | SM (d18:2/18:0) | 1.40 | 10.426 ±2.543 | 0.145 ±0.051 | 0.0000 |
| | SM (d18:2/16:0(OH)) | 1.37 | 0.419 ±0.058 | 0.054 ±0.016 | 0.0000 |
| Wild Cordyceps V.S. <i>Gliocadium roseum</i> | Cer (d18:1/18:1) | 1.45 | 0.074 ±0.069 | 13.455 ±0.594 | 0.0000 |
| | Sa (d16:0) | 1.44 | 0.013 ±0.013 | 0.211 ±0.005 | 0.0000 |
| | Sa (m18:0) | 1.44 | 0.046 ±0.011 | 0.283 ±0.024 | 0.0002 |
| <i>Hirsutella sinensis</i> V.S. <i>Cordyceps sinensis</i> | Sa (d16:0) | 1.28 | 0.014 ±0.006 | 12.732 ±0.724 | 0.0000 |
| | So (t22:2) | 1.28 | 0.252 ±0.071 | 10.170 ±0.732 | 0.0000 |
| | So (d20:1) | 1.27 | 2.329 ±0.583 | 12.913 ±0.829 | 0.0000 |
| <i>Hirsutella sinensis</i> V.S. <i>Cephalosporium sinensis</i> | Cer (d18:1/16:1) | 1.42 | 12.510 ±1.138 | 1.109 ±0.309 | 0.0000 |
| | HexCer (d19:2/16:0(OH)) | 1.37 | 5.436 ±0.638 | 0.547 ±0.802 | 0.0000 |
| | Cer (d18:1/18:1) | 1.36 | 1.227 ±0.845 | 12.008 ±2.387 | 0.0000 |
| <i>Hirsutella sinensis</i> V.S. <i>Mortierella SP</i> | HexCer (t19:1/16:1) | 1.41 | 4.416 ±0.619 | 0.056 ±0.018 | 0.0000 |
| | Cer (d18:2/18:1) | 1.39 | 0.009 ±0.005 | 0.543 ±0.083 | 0.0000 |
| | SM (d14:1/20:0) | 1.35 | 11.618 ±2.342 | 1.080 ±0.410 | 0.0000 |
| <i>Hirsutella sinensis</i> V.S. <i>Gliocadium roseum</i> | Sa (d16:0) | 1.41 | 0.014 ±0.006 | 0.211 ±0.005 | 0.0000 |
| | Sa (t18:0) | 1.41 | 0.107 ±0.049 | 4.544 ±0.177 | 0.0000 |
| | Cer (d18:1/18:1) | 1.41 | 1.227 ±0.845 | 13.455 ±0.594 | 0.0000 |
| <i>Cordyceps sinensis</i> V.S. <i>Cephalosporium sinensis</i> | Sa (d16:0) | 1.56 | 12.732 ±0.724 | 0.33 ±0.174 | 0.0000 |
| | Cer (d19:2/16:0(OH)) | 1.56 | 10.203 ±1.147 | 0.547 ±0.802 | 0.0000 |
| | Cer (d18:1/16:1) | 1.55 | 11.865 ±1.381 | 1.109 ±0.309 | 0.0000 |
| <i>Cordyceps sinensis</i> V.S. <i>Mortierella SP</i> | Sa (d16:0) | 1.43 | 12.732 ±0.724 | 0.068 ±0.033 | 0.0000 |
| | Cer (d19:2/16:0(OH)) | 1.41 | 10.203 ±1.147 | 3.820 ±2.451 | 0.0001 |
| | Cer (d18:2/18:1) | 1.38 | 0.118 ±0.035 | 0.543 ±0.083 | 0.0000 |
| <i>Cordyceps sinensis</i> V.S. <i>Gliocadium roseum</i> | Cer (d18:1/18:1) | 1.28 | 0.446 ±0.396 | 13.455 ±0.594 | 0.0000 |
| | Sa (t18:0) | 1.28 | 0.674 ±0.121 | 4.544 ±0.177 | 0.0000 |
| | Sa (t18:0) isomer | 1.28 | 2.373 ±0.210 | 10.881 ±0.455 | 0.0000 |
| <i>Cephalosporium sinensis</i> V.S. <i>Mortierella SP</i> | Cer (d18:2/16:1) | 1.76 | 1.008 ±0.299 | 2.350 ±0.452 | 0.0000 |
| | Cer (d18:1/18:1) | 1.74 | 12.008 ±2.387 | 3.823 ±1.802 | 0.0000 |
| | So (d16:1) | 1.70 | 0.375 ±0.223 | 1.317 ±0.340 | 0.0000 |

| | | | | | |
|---|------------------|------|--------------|--------------|--------|
| <i>Cephalosporium sinensis</i> V.S. <i>Gliocadium roseum</i> | Sa (t18:0) | 1.90 | 0.261 ±0.121 | 4.544 ±0.177 | 0.0000 |
| | So (t18:1) | 1.88 | 0.107 ±0.062 | 0.929 ±0.065 | 0.0000 |
| | Cer (d18:1/14:1) | 1.81 | 0.053 ±0.016 | 0.141 ±0.004 | 0.0000 |
| <i>Mortierella SP</i> V.S. <i>Gliocadium roseum</i> | Sa (t18:0) | 1.41 | 0.392 ±0.096 | 4.544 ±0.177 | 0.0000 |
| | So (t18:1) | 1.39 | 0.196 ±0.078 | 0.929 ±0.065 | 0.0000 |
| | Cer (d18:2/18:1) | 1.36 | 0.543 ±0.083 | 0.029 ±0.018 | 0.0000 |

Figure S1. Linear correlation of the spiked amounts with determined amounts of SPL standards.

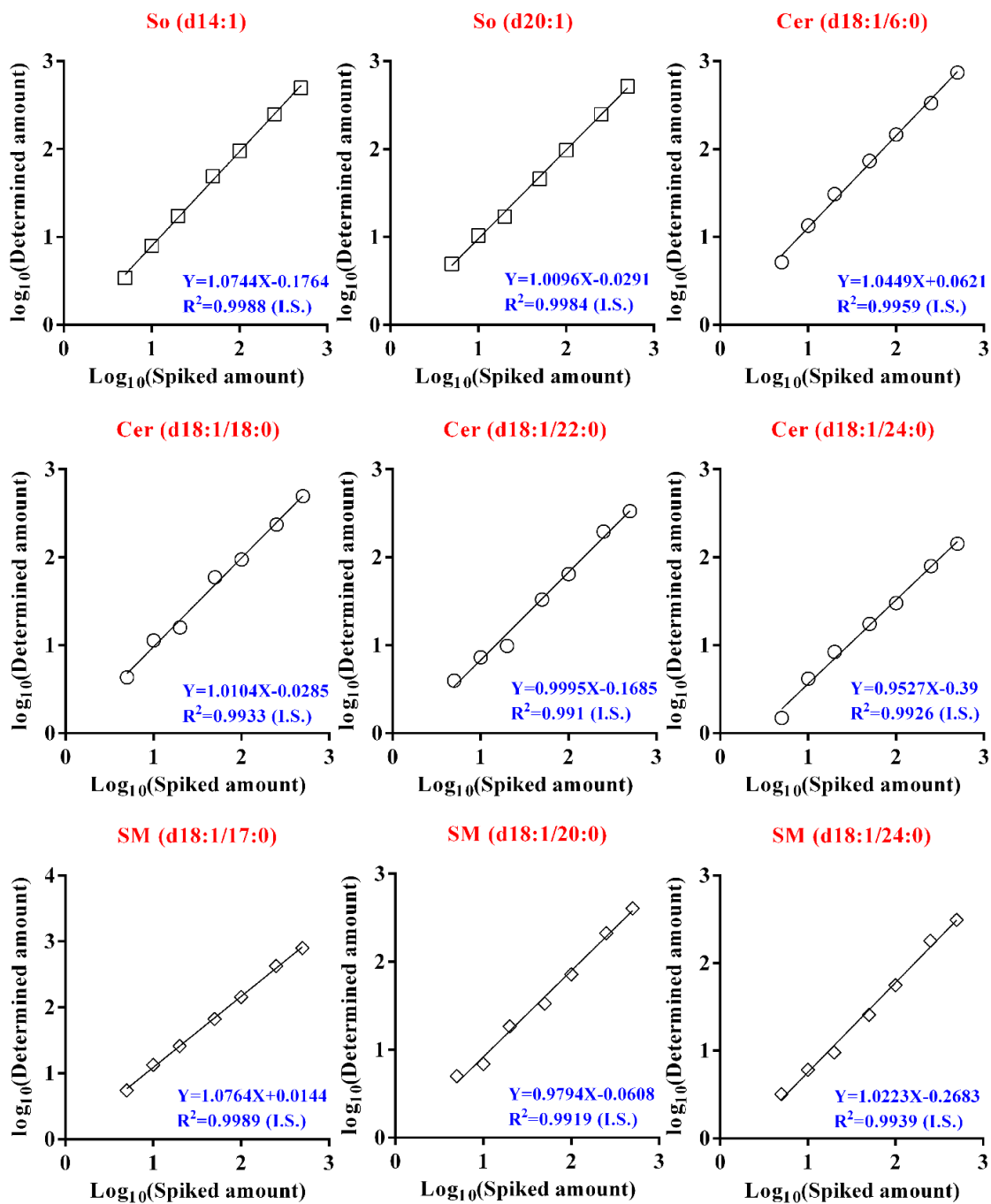
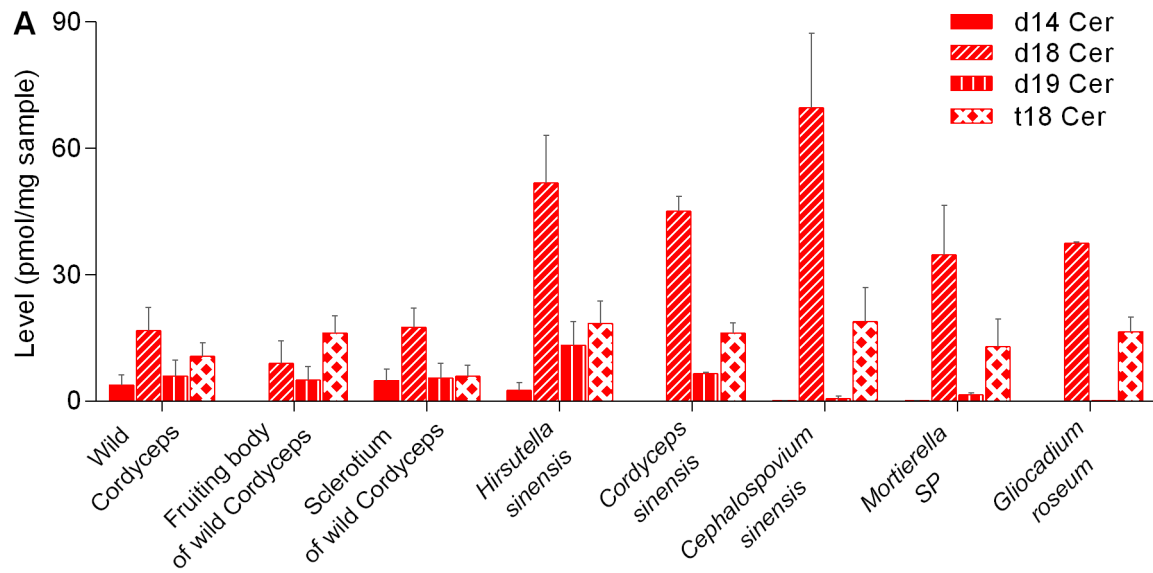
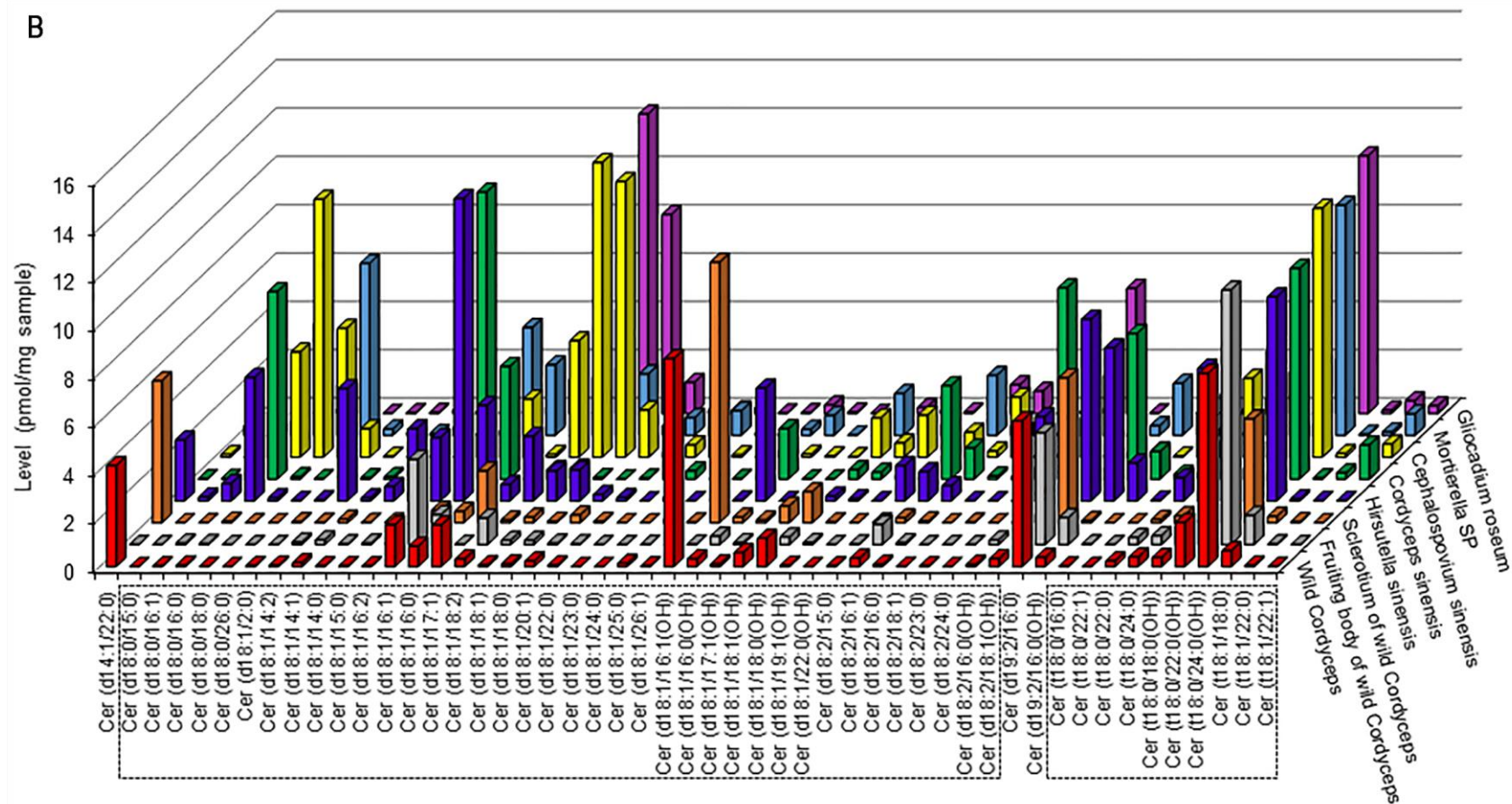


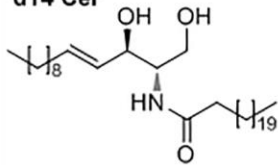
Figure S2. The total levels of four subclasses of ceramides (A, each bar represents mean \pm SD) and the levels of 51 ceramides (B, each bar represents mean value of individual ceramides) in wild Cordyceps and its mycelia.



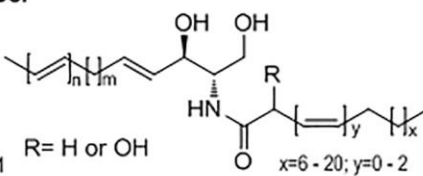
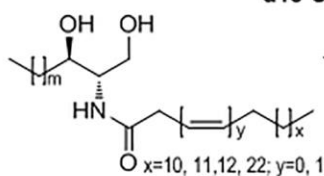
B



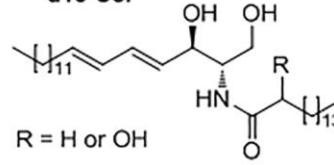
d14 Cer



d18 Cer



d19 Cer



t18 Cer

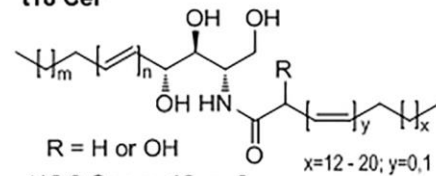


Figure S3. The total levels of glycosphingolipids (A, each bar represents mean \pm SD) and the levels of 8 glycosphingolipids (B, each bar represents mean value of individual glycosphingolipids) in wild Cordyceps and its mycelia.

