**Details regarding experimental procedures. Data for figures.**

## Materials and methods

### Additional information for SH-SY5Y cells

Passage numbers: 10-15

The date for obtaining the cells from Prof. Ming-Fu Chang's laboratory: August 22, 2018

### Concentration normalization for mass spectrometry analyses of metabolic profiles

In order to conduct concentration normalization, an Agilent 1290 UHPLC system (ultra-high performance liquid chromatography) (Agilent Technologies, Santa Clara, CA, USA) coupled to an Agilent 6460 QqQ (triple quadrupole) mass spectrometry (Agilent Technologies, Santa Clara, CA, USA) was utilized. The procedure was similar to that previously described by Chen et al. [1] with necessary adjustments. A sample of 2 μL was injected into electrospray ionization mass spectrometry to conduct flow injection analysis. The ion suppression indicator (ISI), hexakis(2,2,3,3-tetrafluoropropoxy)phosphazene, was spiked in the blank solution and the cell extracts. The mobile phase consisted of a 1:1 mixture of water/0.1% formic acid and acetonitrile/0.1% formic acid. The flow rate was 200 μL $min^{-1}$. For sample ionization, a Jet Stream electrospray ionization source was applied. The mass spectrometer parameters were as follows: 100°C gas temperature, 3 L min$^{-1}$ gas flow, 10 psi nebulizer pressure, 150°C sheath gas temperature, 3 L min$^{-1}$ sheath gas flow, 4 kV capillary voltage in the positive ion mode, and 120 V fragmentation voltage. The calibration curve was established by signal reduction (the extent of ISI in blank solution subtracted by that in cell samples) and dilution factors of the cell samples.

**Concentration normalization for mass spectrometry analyses of long-chain and very long-chain fatty acids**

For concentration normalization, an Agilent 1290 UHPLC system coupled to an Agilent 6460 QqQ mass spectrometry was utilized. The procedure was similar to that previously described by Chao et al. [2] with necessary adjustments. A sample of 2 μL was injected into electrospray ionization mass spectrometry to conduct flow injection analysis. The mobile phase consisted of a mixture of solvent A and solvent B (1:1). The former contained 40% acetonitrile, 0.1% formic acid, 10 mM ammonium acetate while the latter was a mixture of isopropanol:acetonitrile (9:1), 0.1% formic acid, 10 mM ammonium acetate. The flow rate was 200 μL min$^{-1}$. A Jet Stream electrospray ionization source was applied for sample ionization. The mass spectrometer parameters were as follows: 350°C gas temperature, 10 L min$^{-1}$ gas flow, 40 psi nebulizer pressure, 350°C sheath gas temperature, 11 L min$^{-1}$ sheath gas flow, 4 kV capillary voltage in the positive ion mode, and 120 V fragmentation voltage. The calibration curve was established by the dilution factors of the cell samples and the reciprocal of the total ion chromatogram area in the precursor ion scan of m/z 184.

## References


1. Chen GY, Liao HW, Tsai IL, Tseng YJ, Kuo CH. Using the matrix-induced ion suppression method for concentration normalization in cellular metabolomics studies. Anal Chem. 2015;87:9731-9739.
2. Chao HC, Chen GY, Hsu LC, Liao HW, Yang SY, Wang SY, et al. Using precursor ion scan of 184 with liquid chromatography-electrospray ionization-tandem mass spectrometry for concentration normalization in cellular lipidomic studies. Anal Chim Acta. 2017;971:68-77.

**Data for Fig 1**

**(A)**

Cell viability (% of control cell growth) of undifferentiated SH-SY5Y cells treated with 100 nM of paclitaxel, Phyxol, or Abraxane® for 24 hours assessed by the sulforhodamine B (SRB) assay.

| Paclitaxel (Experiments 1-3) | Phyxol (Experiments 1-3) | Abraxane® (Experiments 1-3) |
|---:|---:|---:|
| 87.3 | 79.6 | 87.7 |
| 75.4 | 75.1 | 69.3 |
| 76.5 | 71.9 | 83.3 |

$F(2,6) = 0.3881$; $p = 0.6942$

**(B)**

Cell viability (% of control cell growth) of differentiated SH-SY5Y cells treated with 100 nM of paclitaxel, Phyxol, or Abraxane® for 24 hours assessed by the sulforhodamine B (SRB) assay.

| Paclitaxel (Experiments 1-3) | Phyxol (Experiments 1-3) | Abraxane® (Experiments 1-3) |
|---:|---:|---:|
| 96.5 | 101.6 | 97.5 |
| 100.2 | 102.0 | 102.4 |
| 98.9 | 96.0 | 100.0 |

$F(2,6) = 0.2668$; $p = 0.7744$

**Data for Fig 2**

**(A)**

Fold changes relative to the control group in the levels of carnitine and acylcarnitines of undifferentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours.

| | | Paclitaxel | |
|---|---|---|---|
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 0.571 | 0.684 | 0.632 |
| Acetylcarnitine | 0.609 | 0.518 | 0.648 |
| Propionylcarnitine | 0.781 | 0.783 | 0.741 |
| Iso-/Butyrylcarnitine | 0.648 | 0.758 | 0.720 |
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 0.586 | 0.603 | 0.661 |
| Tiglylcarnitine | 0.567 | 0.658 | 0.681 |
| Hexanoylcarnitine | 0.682 | 0.685 | 0.633 |
| Octanoylcarnitine | 0.677 | 0.809 | 0.968 |
| Decanoylcarnitine | 0.808 | 0.822 | 0.841 |
| Tetradecanoylcarnitine | 0.625 | 0.779 | 0.750 |
| Tetradecenoylcarnitine | 0.616 | 0.687 | 0.821 |
| Hexadecanoylcarnitine | 0.715 | 0.849 | 0.981 |
| Hexadecenoylcarnitine | 0.710 | 0.843 | 0.875 |
| Stearoylcarnitine | 0.545 | 0.812 | 0.870 |
| Oleoylcarnitine | 0.804 | 1.125 | 0.968 |
| | | Phyxol | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 0.567 | 0.461 | 0.604 |
| Acetylcarnitine | 0.607 | 0.645 | 0.688 |
| Propionylcarnitine | 0.556 | 0.708 | 0.893 |
| Iso-/Butyrylcarnitine | 0.550 | 0.659 | 0.751 |

| | | | |
|---|---|---|---|
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 0.580 | 0.611 | 0.752 |
| Tiglylcarnitine | 0.516 | 0.600 | 0.881 |
| Hexanoylcarnitine | 0.462 | 0.544 | 0.651 |
| Octanoylcarnitine | 3.160 | 2.365 | 2.807 |
| Decanoylcarnitine | 0.663 | 0.758 | 0.476 |
| Tetradecanoylcarnitine | 0.627 | 0.665 | 0.837 |
| Tetradecenoylcarnitine | 0.638 | 0.714 | 0.851 |
| Hexadecanoylcarnitine | 0.853 | 0.969 | 0.959 |
| Hexadecenoylcarnitine | 0.830 | 0.853 | 0.999 |
| Stearoylcarnitine | 0.834 | 0.803 | 0.908 |
| Oleoylcarnitine | 1.022 | 1.055 | 1.051 |
| | | Abraxane® | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 0.835 | 0.794 | 0.797 |
| Acetylcarnitine | 0.892 | 0.832 | 0.811 |
| Propionylcarnitine | 1.065 | 1.056 | 1.064 |
| Iso-/Butyrylcarnitine | 0.881 | 0.852 | 0.909 |
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 0.887 | 0.801 | 0.951 |
| Tiglylcarnitine | 0.842 | 0.827 | 0.954 |
| Hexanoylcarnitine | 0.978 | 0.867 | 1.025 |
| Octanoylcarnitine | 1.055 | 1.142 | 1.114 |
| Decanoylcarnitine | 0.976 | 1.040 | 1.275 |
| Tetradecanoylcarnitine | 0.923 | 0.930 | 0.932 |
| Tetradecenoylcarnitine | 0.915 | 0.964 | 1.096 |
| Hexadecanoylcarnitine | 1.174 | 1.166 | 1.106 |
| Hexadecenoylcarnitine | 1.101 | 1.037 | 1.067 |
| Stearoylcarnitine | 1.009 | 1.059 | 1.127 |
| Oleoylcarnitine | 1.324 | 1.294 | 1.252 |

**Carnitine**

$F(2,6) = 17.7333$; $p = 0.0030$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.2264 |
| Paclitaxel | Abraxane® | 0.0175 |
| Phyxol | Abraxane® | 0.0027 |

**Acetylcarnitine**

F(2,6) = 20.3823; $p$ = 0.0021

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.4355 |
| Paclitaxel | Abraxane® | 0.0022 |
| Phyxol | Abraxane® | 0.0075 |

**Propionylcarnitine**

F(2,6) = 10.5978; $p$ = 0.0107

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.8208 |
| Paclitaxel | Abraxane® | 0.0250 |
| Phyxol | Abraxane® | 0.0126 |

**Iso-/Butyrylcarnitine**

F(2,6) = 9.0577; $p$ = 0.0154

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.6095 |
| Paclitaxel | Abraxane® | 0.0487 |
| Phyxol | Abraxane® | 0.0153 |

**Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine**

F(2,6) = 11.8736; $p$ = 0.0082

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.8605 |
| Paclitaxel | Abraxane® | 0.0102 |
| Phyxol | Abraxane® | 0.0181 |

**Tiglylcarnitine**

F(2,6) = 3.3891; $p$ = 0.1035

**Hexanoylcarnitine**

F(2,6) = 23.9058; $p$ = 0.0014

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.2204 |
| Paclitaxel | Abraxane® | 0.0071 |
| Phyxol | Abraxane® | 0.0013 |

**Octanoylcarnitine**

F(2,6) = 55.4092; $p$ = 0.0001

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0002 |
| Paclitaxel | Abraxane® | 0.3899 |
| Phyxol | Abraxane® | 0.0004 |

**Decanoylcarnitine**

F(2,6) = 10.7925; $p$ = 0.0103

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.2182 |
| Paclitaxel | Abraxane® | 0.0772 |
| Phyxol | Abraxane® | 0.0086 |

**Tetradecanoylcarnitine**

F(2,6) = 7.1601; $p$ = 0.0257

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.9919 |
| Paclitaxel | Abraxane® | 0.0418 |
| Phyxol | Abraxane® | 0.0361 |

**Tetradecenoylcarnitine**

F(2,6) = 7.0395; $p$ = 0.0267

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.9479 |
| Paclitaxel | Abraxane® | 0.0337 |
| Phyxol | Abraxane® | 0.0492 |

**Hexadecanoylcarnitine**

F(2,6) = 9.4056; $p$ = 0.0141

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.5503 |
| Paclitaxel | Abraxane® | 0.0137 |
| Phyxol | Abraxane® | 0.0489 |

**Hexadecenoylcarnitine**

F(2,6) = 9.2002; $p$ = 0.0149

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.4081 |
| Paclitaxel | Abraxane® | 0.0133 |
| Phyxol | Abraxane® | 0.0674 |

**Stearoylcarnitine**

F(2,6) = 6.6749; $p$ = 0.0298

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.5070 |
| Paclitaxel | Abraxane® | 0.0269 |
| Phyxol | Abraxane® | 0.1150 |

**Oleoylcarnitine**

F(2,6) = 9.4090; $p$ = 0.0141

| | | $p$ value |
|---|---|---|
| Paclitaxel | Phyxol | 0.6149 |
| Paclitaxel | Abraxane® | 0.0142 |
| Phyxol | Abraxane® | 0.0441 |

**(B)**

Fold changes relative to the control group in the levels of carnitine and acylcarnitines of differentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours.

| | | Paclitaxel | |
|---|---|---|---|
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 0.865 | 0.912 | 0.954 |
| Acetylcarnitine | 0.707 | 0.705 | 0.787 |
| Propionylcarnitine | 0.917 | 1.025 | 0.869 |
| Iso-/Butyrylcarnitine | 0.912 | 0.945 | 0.914 |
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 0.817 | 0.880 | 0.829 |
| Tiglylcarnitine | 0.856 | 0.966 | 0.968 |
| Hexanoylcarnitine | 0.917 | 0.860 | 0.919 |
| Octanoylcarnitine | 0.888 | 0.763 | 1.007 |
| Decanoylcarnitine | 0.912 | 1.068 | 0.884 |
| Dodecanoylcarnitine | 1.092 | 1.137 | 0.890 |
| Tetradecanoylcarnitine | 0.829 | 1.037 | 0.905 |
| Tetradecenoylcarnitine | 0.992 | 1.012 | 0.864 |
| Hexadecanoylcarnitine | 0.722 | 0.894 | 0.820 |
| Hexadecenoylcarnitine | 0.829 | 0.958 | 0.854 |
| Stearoylcarnitine | 0.529 | 0.529 | 0.530 |
| Oleoylcarnitine | 0.743 | 0.839 | 0.742 |
| | | Phyxol | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 0.994 | 1.198 | 0.993 |
| Acetylcarnitine | 0.793 | 0.843 | 0.992 |
| Propionylcarnitine | 1.120 | 1.001 | 0.888 |
| Iso-/Butyrylcarnitine | 0.943 | 1.018 | 0.873 |
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 0.926 | 1.024 | 0.846 |
| Tiglylcarnitine | 0.916 | 1.070 | 0.973 |
| Hexanoylcarnitine | 1.038 | 1.050 | 1.043 |
| Octanoylcarnitine | 2.933 | 2.298 | 3.333 |
| Decanoylcarnitine | 0.769 | 1.025 | 1.036 |
| Dodecanoylcarnitine | 0.906 | 1.245 | 0.932 |
| Tetradecanoylcarnitine | 0.963 | 1.099 | 0.907 |
| Tetradecenoylcarnitine | 1.011 | 1.110 | 0.926 |
| Hexadecanoylcarnitine | 0.953 | 1.032 | 0.923 |

| | | | |
|---|---|---|---|
| Hexadecenoylcarnitine | 0.959 | 1.080 | 0.954 |
| Stearoylcarnitine | 0.769 | 0.715 | 0.747 |
| Oleoylcarnitine | 0.947 | 1.050 | 0.873 |
| | | Abraxane® | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Carnitine | 1.095 | 1.087 | 1.104 |
| Acetylcarnitine | 1.007 | 0.874 | 1.119 |
| Propionylcarnitine | 1.237 | 1.122 | 1.134 |
| Iso-/Butyrylcarnitine | 1.085 | 1.095 | 1.093 |
| Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine | 1.061 | 1.109 | 1.080 |
| Tiglylcarnitine | 1.100 | 1.111 | 1.105 |
| Hexanoylcarnitine | 1.100 | 0.968 | 1.054 |
| Octanoylcarnitine | 1.203 | 0.841 | 1.245 |
| Decanoylcarnitine | 0.870 | 1.011 | 1.266 |
| Dodecanoylcarnitine | 0.976 | 1.292 | 1.192 |
| Tetradecanoylcarnitine | 1.034 | 1.163 | 1.106 |
| Tetradecenoylcarnitine | 1.044 | 1.131 | 1.109 |
| Hexadecanoylcarnitine | 0.882 | 0.968 | 1.013 |
| Hexadecenoylcarnitine | 0.963 | 1.117 | 1.070 |
| Stearoylcarnitine | 0.667 | 0.592 | 0.760 |
| Oleoylcarnitine | 0.864 | 0.975 | 0.958 |

**Carnitine**

$F(2,6) = 5.4565$; $p = 0.0446$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0970 |
| Paclitaxel | Abraxane® | 0.0481 |
| Phyxol | Abraxane® | 0.8458 |

**Acetylcarnitine**

F(2,6) = 5.7663; $p$ = 0.0401

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.2442 |
| Paclitaxel | Abraxane® | 0.0337 |
| Phyxol | Abraxane® | 0.3230 |

**Propionylcarnitine**

F(2,6) = 5.1327; $p$ = 0.0502

**Iso-/Butyrylcarnitine**

F(2,6) = 13.2659; $p$ = 0.0063

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.8262 |
| Paclitaxel | Abraxane® | 0.0077 |
| Phyxol | Abraxane® | 0.0145 |

**Isovaleryl-/2-Methylbutyryl-/Valerylcarnitine**

F(2,6) = 13.9254; $p$ = 0.0056

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.2069 |
| Paclitaxel | Abraxane® | 0.0047 |
| Phyxol | Abraxane® | 0.0388 |

**Tiglylcarnitine**

F(2,6) = 7.0988; $p$ = 0.0262

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.5060 |
| Paclitaxel | Abraxane® | 0.0238 |
| Phyxol | Abraxane® | 0.1009 |

**Hexanoylcarnitine**

F(2,6) = 10.9949; $p$ = 0.0099

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0150 |
| Paclitaxel | Abraxane® | 0.0163 |
| Phyxol | Abraxane® | 0.9966 |

**Octanoylcarnitine**

F(2,6) = 31.2535; $p$ = 0.0007

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0009 |
| Paclitaxel | Abraxane® | 0.7336 |
| Phyxol | Abraxane® | 0.0016 |

**Decanoylcarnitine**

F(2,6) = 0.4174; $p$ = 0.6765

**Dodecanoylcarnitine**

F(2,6) = 0.5466; $p$ = 0.6053

**Tetradecanoylcarnitine**

$F(2,6) = 2.8877$; $p = 0.1323$

**Tetradecenoylcarnitine**

$F(2,6) = 2.5616$; $p = 0.1570$

**Hexadecanoylcarnitine**

$F(2,6) = 4.4704$; $p = 0.0648$

**Hexadecenoylcarnitine**

$F(2,6) = 4.2315$; $p = 0.0714$

**Stearoylcarnitine**

$F(2,6) = 13.7541$; $p = 0.0057$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0051 |
| Paclitaxel | Abraxane® | 0.0315 |
| Phyxol | Abraxane® | 0.2818 |

**Oleoylcarnitine**

$F(2,6) = 5.9958$; $p = 0.0371$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0432 |
| Paclitaxel | Abraxane® | 0.0730 |
| Phyxol | Abraxane® | 0.9070 |

**Data for Fig 3**

**(A)**

Fold changes relative to the control group in the levels of long-chain and very long-chain fatty acids of undifferentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours.

| | | Paclitaxel | |
|---|---|---|---|
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Myristic acid | 0.777 | 0.949 | 0.930 |
| Palmitic acid | 0.916 | 1.066 | 0.893 |
| Palmitoleic acid | 0.895 | 0.911 | 0.839 |
| Stearic acid | 0.881 | 1.059 | 0.952 |
| Oleic acid | 0.748 | 0.899 | 0.830 |
| Linoleic acid | 0.713 | 0.898 | 0.794 |
| Eicosanoic acid | 0.896 | 1.073 | 0.983 |
| | | Phyxol | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Myristic acid | 0.825 | 0.851 | 0.903 |
| Palmitic acid | 1.103 | 1.059 | 1.121 |
| Palmitoleic acid | 0.980 | 1.018 | 1.029 |
| Stearic acid | 1.117 | 1.101 | 1.199 |
| Oleic acid | 0.876 | 0.915 | 1.048 |
| Linoleic acid | 0.997 | 0.993 | 1.026 |
| Eicosanoic acid | 0.994 | 1.105 | 1.020 |
| | | Abraxane® | |

| | Experiment 1 | Experiment 2 | Experiment 3 |
|---|---|---|---|
| Myristic acid | 1.064 | 1.076 | 1.067 |
| Palmitic acid | 1.346 | 1.212 | 1.228 |
| Palmitoleic acid | 1.141 | 1.171 | 1.258 |
| Stearic acid | 1.206 | 1.081 | 1.187 |
| Oleic acid | 0.987 | 0.930 | 1.005 |
| Linoleic acid | 1.352 | 1.136 | 1.241 |
| Eicosanoic acid | 1.164 | 1.238 | 1.262 |

**Myristic acid**

$F(2,6) = 11.1640$; $p = 0.0095$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.8573 |
| Paclitaxel | Abraxane® | 0.0210 |
| Phyxol | Abraxane® | 0.0116 |

**Palmitic acid**

$F(2,6) = 13.6140$; $p = 0.0059$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.1260 |
| Paclitaxel | Abraxane® | 0.0048 |
| Phyxol | Abraxane® | 0.0636 |

**Palmitoleic acid**

$F(2,6) = 37.5968$; $p = 0.0004$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0277 |
| Paclitaxel | Abraxane® | 0.0003 |

| | | |
|---|---|---|
| Phyxol | Abraxane® | 0.0055 |

**Stearic acid**

F(2,6) = 6.7109; $p$ = 0.0295

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0544 |
| Paclitaxel | Abraxane® | 0.0368 |
| Phyxol | Abraxane® | 0.9454 |

**Oleic acid**

F(2,6) = 3.6412; $p$ = 0.0922

**Linoleic acid**

F(2,6) = 21.3451; $p$ = 0.0019

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0537 |
| Paclitaxel | Abraxane® | 0.0015 |
| Phyxol | Abraxane® | 0.0291 |

**Eicosanoic acid**

F(2,6) = 9.9750; $p$ = 0.0124

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.6035 |
| Paclitaxel | Abraxane® | 0.0125 |
| Phyxol | Abraxane® | 0.0391 |

**(B)**

Fold changes relative to the control group in the levels of long-chain and very long-chain fatty acids of differentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours.

| | | Paclitaxel | |
|---|---|---|---|
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Palmitic acid | 1.121 | 1.132 | 1.264 |
| Stearic acid | 1.104 | 0.952 | 1.114 |
| Oleic acid | 1.176 | 1.165 | 1.272 |
| Linoleic acid | 0.982 | 0.992 | 1.156 |
| Eicosanoic acid | 1.048 | 1.100 | 1.223 |
| Tetracosanoic acid | 1.089 | 1.095 | 1.236 |
| Hexacosanoic acid | 1.171 | 1.252 | 1.291 |
| | | Phyxol | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Palmitic acid | 1.074 | 1.187 | 1.220 |
| Stearic acid | 1.158 | 1.002 | 1.141 |
| Oleic acid | 1.083 | 1.043 | 1.217 |
| Linoleic acid | 0.930 | 1.004 | 1.071 |
| Eicosanoic acid | 1.146 | 1.085 | 1.030 |
| Tetracosanoic acid | 0.940 | 0.996 | 1.033 |
| Hexacosanoic acid | 0.995 | 1.141 | 1.161 |
| | | Abraxane® | |
| | Experiment 1 | Experiment 2 | Experiment 3 |
| Palmitic acid | 1.274 | 1.294 | 1.180 |
| Stearic acid | 1.148 | 1.047 | 1.005 |
| Oleic acid | 1.228 | 1.128 | 1.088 |
| Linoleic acid | 1.012 | 1.041 | 0.908 |
| Eicosanoic acid | 1.173 | 1.255 | 1.107 |

| | | | |
|---|---|---|---|
| Tetracosanoic acid | 1.199 | 1.112 | 1.129 |
| Hexacosanoic acid | 1.132 | 1.176 | 1.059 |

**Palmitic acid**

F(2,6) = 1.3149; $p$ = 0.3361

**Stearic acid**

F(2,6) = 0.2238; $p$ = 0.8059

**Oleic acid**

F(2,6) = 1.0891; $p$ = 0.3949

**Linoleic acid**

F(2,6) = 0.3994; $p$ = 0.6873

**Eicosanoic acid**

F(2,6) = 1.1224; $p$ = 0.3854

**Tetracosanoic acid**

F(2,6) = 6.3065; $p$ = 0.0335

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0541 |
| Paclitaxel | Abraxane® | 0.9895 |
| Phyxol | Abraxane® | 0.0456 |

**Hexacosanoic acid**

$F(2,6) = 3.2233$; $p = 0.1120$

**Data for Fig 4**

**(A)**

Fold changes in the medium-chain acyl-CoA dehydrogenase (MCAD) protein level relative to control (relative expression normalized to cyclophilin A) in undifferentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours

| Paclitaxel (Samples 1-6) | Phyxol (Samples 1-6) | Abraxane® (Samples 1-6) |
|---:|---:|---:|
| 1.144 | 0.941 | 1.066 |
| 1.049 | 0.870 | 1.130 |
| 0.924 | 0.918 | 0.979 |
| 0.977 | 0.915 | 1.120 |
| 1.052 | 0.811 | 0.921 |
| 1.033 | 0.823 | 0.982 |

$F(2,15) = 8.8081$; $p = 0.0030$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0070 |
| Paclitaxel | Abraxane® | 0.9972 |

| | | |
|---|---|---|
| Phyxol | Abraxane® | 0.0061 |

**(B)**

Fold changes in the medium-chain acyl-CoA dehydrogenase (MCAD) protein level relative to control (relative expression normalized to cyclophilin A) in differentiated SH-SY5Y cells treated with 100 nM of paclitaxel (in dimethyl sulfoxide), Phyxol, or Abraxane® for 24 hours

| Paclitaxel (Samples 1-6) | Phyxol (Samples 1-6) | Abraxane® (Samples 1-6) |
|---:|---:|---:|
| 1.005 | 0.883 | 1.056 |
| 1.006 | 0.921 | 1.015 |
| 1.077 | 0.963 | 0.990 |
| 1.073 | 0.833 | 1.069 |
| 1.055 | 0.924 | 1.029 |
| 1.030 | 0.793 | 1.065 |

$F(2,15) = 23.2812$; $p = 0.00003$

| | | *p* value |
|---|---|---|
| Paclitaxel | Phyxol | 0.0001 |
| Paclitaxel | Abraxane® | 0.9889 |
| Phyxol | Abraxane® | 0.0001 |