**Supplementary Table 1** Composition of nutrient elements (oven dry basis) of *Micranthemum umbrosum* plant parts grown in As tainted water

| Dose (µg $L^{-1}$) | Plant parts | K (mg $g^{-1}$) | Ca (mg $g^{-1}$) | Mg (µg $g^{-1}$) | Mn (µg $g^{-1}$) | Zn (µg $g^{-1}$) |
|---|---|---|---|---|---|---|
| 0 | Leaf | 23.33±0.59 | 3.54±0.10 | 22.66±0.37 | 225.09±8.32 | 82.57±1.46 |
| | Stem | 17.54±0.73 | 2.89±0.15 | 18.03±1.11 | 120.05±3.94 | 39.26±1.88 |
| | Root | 8.38±0.63 | 3.94±0.08 | 4.87±1.62 | 93.98±5.65 | 37.94±1.19 |
| 200 | Leaf | 24.63±0.33 | 3.63±0.10 | **40.91±0.72 | **135.11±2.00 | **70.02±1.84 |
| | Stem | **25.73±0.69 | 4.69±0.26 | **32.56±1.89 | 143.95±4.18 | 79.85±1.95 |
| | Root | 10.75±0.81 | 3.01±0.12 | 9.01±0.81 | 170.60±2.05 | 99.69±4.58 |
| 500 | Leaf | 21.88±0.30 | *3.38±0.06 | **32.50±3.10 | **83.58±1.39 | **63.27±1.37 |
| | Stem | **25.99±0.31 | 4.17±0.14 | **28.16±1.19 | **92.79±2.85 | 78.76±4.30 |
| | Root | 12.13±1.32 | 4.93±0.20 | 6.26±0.75 | 148.64±7.73 | 93.65±2.26 |
| 1000 | Leaf | 17.22±0.65 | **2.77±0.05 | *24.00±1.51 | **68.47±3.49 | **52.79±2.65 |
| | Stem | **22.47±0.48 | 4.06±0.03 | 15.91±1.31 | *89.84±0.98 | 74.76±2.74 |
| | Root | 9.50±1.02 | 4.93±0.24 | 3.77±1.46 | 108.50±6.90 | 89.21±4.27 |

Each value indicated as Mean ± SEM (n=3); ** and * showed significantly difference against control or 0 (µg $L^{-1}$) at $p < 0.01$ and 0.05, respectively.

**Supplementary Table 2** Composition of nutrient elements (oven dry basis) of *Micranthemum umbrosum* plant parts grown in Cd contaminated water

| Dose (µg $L^{-1}$) | Plant parts | K (mg $g^{-1}$) | Ca (mg $g^{-1}$) | Mg (µg $g^{-1}$) | Mn (µg $g^{-1}$) | Zn (µg $g^{-1}$) |
|---|---|---|---|---|---|---|
| 0 | Leaf | 23.33±0.59 | 3.54±0.10 | 22.66±0.37 | 225.09±8.32 | 82.57±1.46 |
| | Stem | 17.54±0.73 | 2.89±0.15 | 18.03±1.11 | 120.05±3.94 | 39.26±1.88 |
| | Root | 8.38±0.63 | 3.94±0.08 | 4.87±1.62 | 93.98±5.65 | 37.94±1.19 |
| 300 | Leaf | 23.64±0.93 | 3.73±0.08 | **19.04±0.11 | **407.88±21.71 | *71.73±2.43 |
| | Stem | 21.28±1.35 | 4.55±0.38 | 14.37±1.61 | **361.38±22.37 | 67.18±4.73 |
| | Root | *12.53±0.83 | *3.56±0.17 | 5.61±0.65 | *301.14±30.53 | 48.04±2.35 |
| 1000 | Leaf | 23.32±1.09 | 3.33±0.11 | *20.16±0.41 | *301.67±0.89 | **67.39±2.03 |
| | Stem | 18.66±0.52 | 3.76±0.06 | 20.30±0.53 | **168.87±5.36 | 54.61±2.62 |
| | Root | **14.87±0.73 | **1.14±0.01 | 7.00±0.79 | *155.77±11.12 | 42.38±1.04 |

Each value indicated as Mean ± SEM (n=3); ** and * showed significantly difference against control or 0 (µg $L^{-1}$) at $p < 0.01$ and 0.05, respectively.

**Supplementary Table 3** Linear regression model for uptake kinetic parameters of inorganic and organic As species; and Cd influx into *Micranthemum umbrosum*

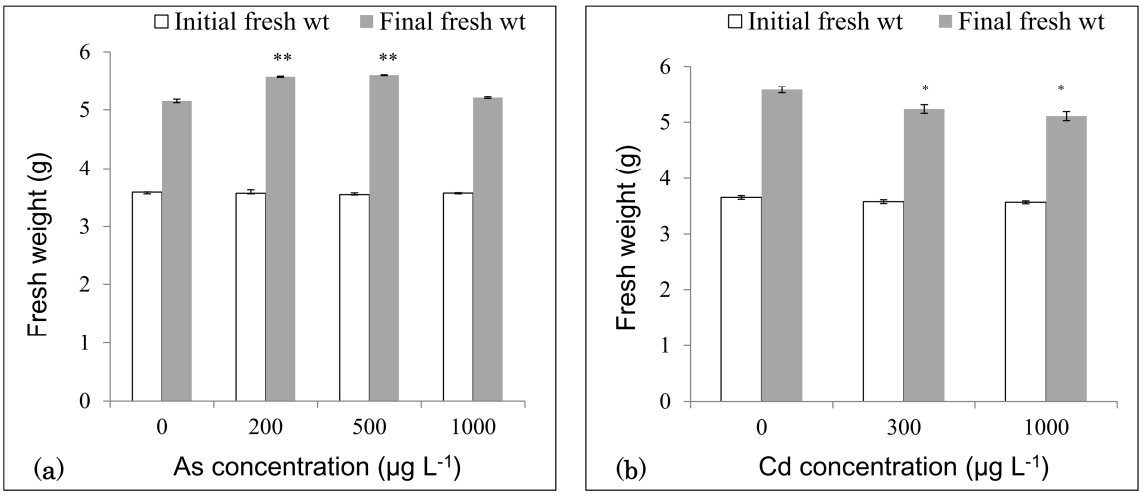
| Species | Linear regression model | | | | |
|---|---|---|---|---|---|
| | $V_{max}$ (µg $g^{-1}$ DW $24h^{-1}$) | $K_m$ (µg $L^{-1}$) | $R^2$ | *a* (slope) | *b* (Intercept) |
| Arsenite | 420 | 454.31 | 0.9027 | 0.4191 | 19.599 |
| MMAA | 90 | 354.43 | 0.7679 | 0.0763 | 17.957 |
| DMAA | 55 | 378.6 | 0.7047 | 0.0375 | 13.325 |
| Cadmium | 390 | 481.62 | 0.9684 | 0.3484 | 27.204 |

**Supplementary Table 4** Amino acids content in 1000 µg $L^{-1}$ Cd treated leaf (n=3)

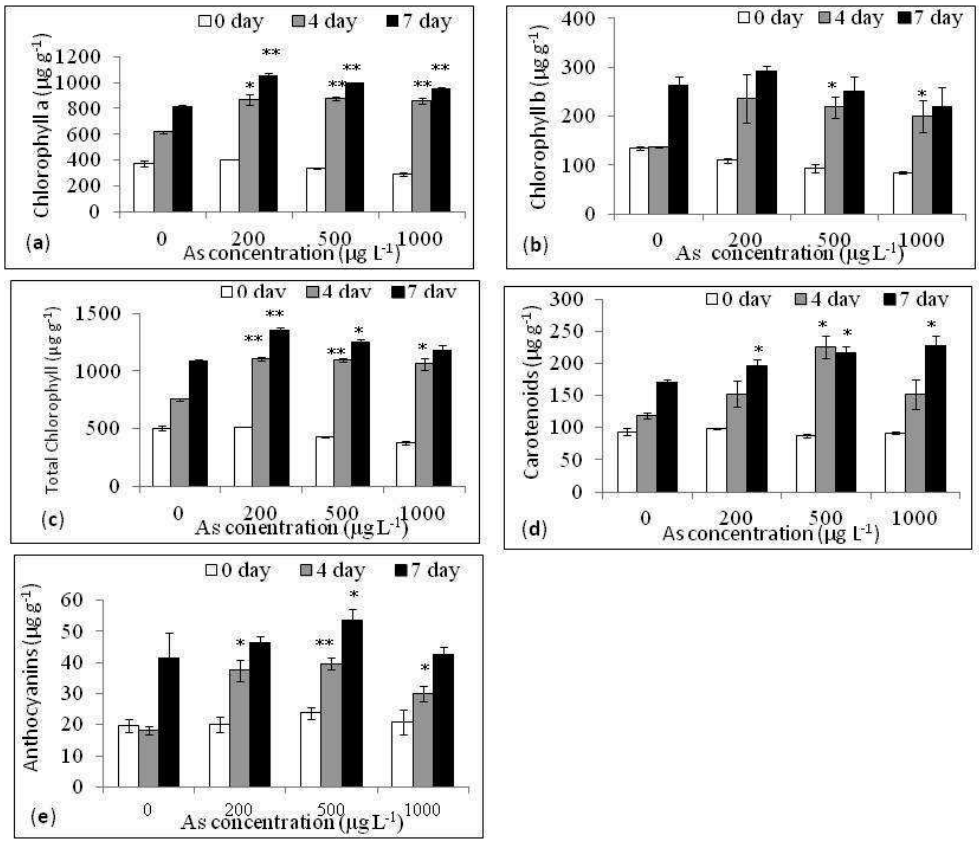
| Amino acids | Mean (nmol ± SEM) | % | Amino acids | Mean (nmol ± SEM) | % |
|---|---|---|---|---|---|
| **CysCOOH** | **0.95**±0.06 | **2.13** | Met | 0.04±0.01 | 0.08 |
| Asp | 5.87±2.73 | 13.19 | Ile | 2.41±1.00 | 5.43 |
| Thr | 2.98±1.34 | 6.69 | Leu | 3.66±1.52 | 8.23 |
| Ser | 3.09±1.30 | 6.94 | Tyr | 0.05±0.03 | 0.11 |
| Glu | 5.20±2.20 | 11.69 | Phe | 1.53±0.71 | 3.43 |
| Gly | 5.49±1.96 | 12.34 | Lys | 3.09±1.46 | 6.95 |
| Ala | 4.43±1.90 | 9.96 | His | 0.75±0.30 | 1.68 |
| Cystine | 0.11±0.03 | 0.25 | Arg | 1.22±0.51 | 2.74 |
| Val | 3.64±1.57 | 8.17 | **Total** | 44.48±17.89 | 100 |

**Supplementary Table 5** Aquatic plant that accumulate As and Cd from water environment

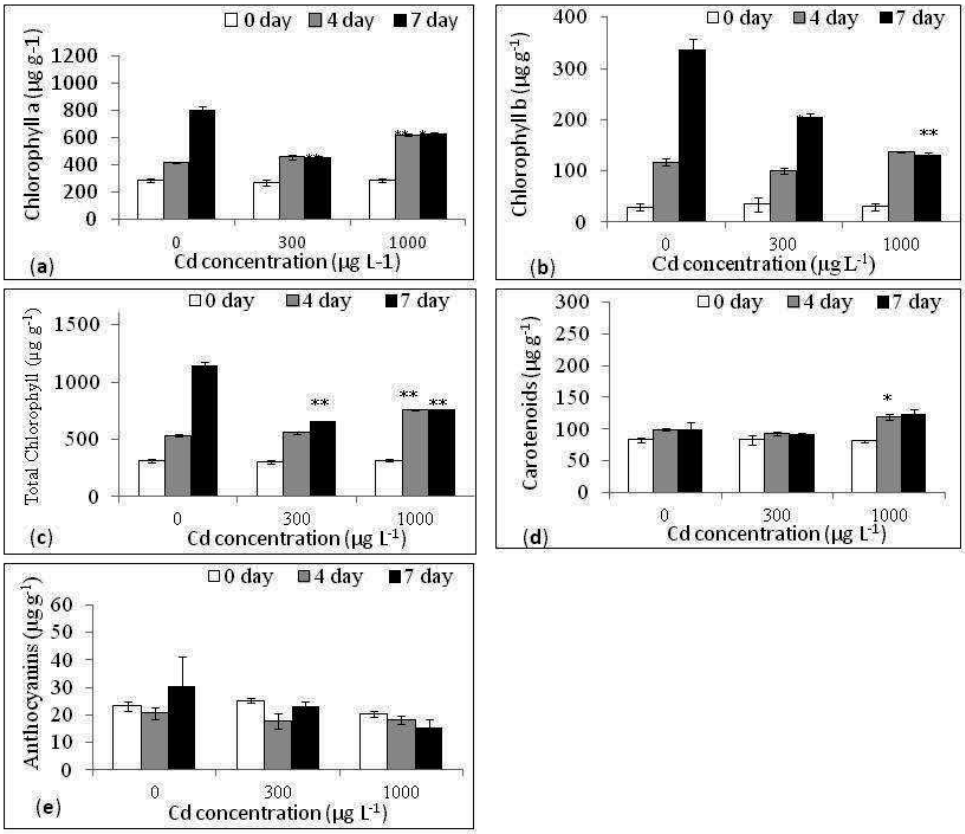
| Scientific name | Element uptake | Amount uptake mg $kg^{-1}$ (DW) | References |
|---|---|---|---|
| *Eleocharis acicularis* (L.) Roem. & schult. | As | 1470 | Sakakibara *et al*., 2011 |
| *Pteris vittata* L. | As | 1400 | Baldwin and Butcher, 2007 |
| *Pteris cretica* (L.) cv. *Mayii* | As | 1200 | |
| *Wolffia globosa* (Roxb.) Hartog & Plas | As | >1000 | Zhang *et al*., 2009 |
| *Hydrilla verticillata* (L.f.) Royle | As | 325 | Lee *et al*., 1991 |
| *Azolla caroliniana* Willd. | As | 280 | Zhang *et al*., 2008 |
| *Spirodela polyrhiza* (L.) Schleid. | As | 0.353 µmol $g^{-1}$ | Rahman *et al*., 2007a |
| ***Micranthemum umbrosum*** (J.F.Gmel.) Blake | **As** | **1219** | **Current study** |
| *Limnocharis flava* (L.) Buchenau | Cd | >1000 | Abhilash *et al*., 2009 |
| *Azolla pinnata* R. Br. | Cd | 740 | Rai, 2008 |
| *Wolffia globosa* (Roxb.) Hartog & Plas | Cd | 500 | Xie *et al*., 2013 |
| *Echinochloa polystachya* (Kunth) Hitchc | Cd | 230-300 | Solis-Dominguez *et al*., 2007 |
| *Helianthus annuus* L. | Cd | 40-330 | Zhi-xin *et al*., 2007 |
| *Rorippa globosa* (Turcz. Ex Fisch. & C.A. Mey.) Hayek | Cd | >100 | Wei *et al*., 2008 |
| ***Micranthemum umbrosum*** (J.F.Gmel.) Blake | **Cd** | **799** | **Current study** |




**Supplementary Fig. 1** Initial and final fresh weight of plant grown in 0, 200, 500, 1000 µg As $L^{-1}$ (a) and 0, 300, 1000 µg Cd $L^{-1}$ (b) water. Error bars indicate mean ± SEM (n =3). ** and * denote significant differences at $P < 0.01$ and 0.05, respectively, compared with their respective control.




**Supplementary Fig. 2** Chlorophyll a (a), chlorophyll b (b), total chlorophyll (c), carotenoids (d) and anthocyanins (e) content of *M. umbrosum* leaf grown in 0, 200, 500 and 1000 µg As $L^{-1}$ water at 0, 4, and 7 days interval. Error bars indicate mean ± SEM (n =3). ** and * denote significant differences at $P < 0.01$ and 0.05, respectively, compared with their respective control (day).




**Supplementary Fig. 3** Chlorophyll a (a), chlorophyll b (b), total chlorophyll (c), carotenoids (d) and anthocyanins (e) content of *M. umbrosum* leaf grown in 0, 300 and 1000 µg Cd $L^{-1}$ water at 0, 4, and 7 days interval. Error bars indicate mean ± SEM (n =3). ** and * denote significant differences at $P < 0.01$ and 0.05, respectively, compared with their respective control (day).