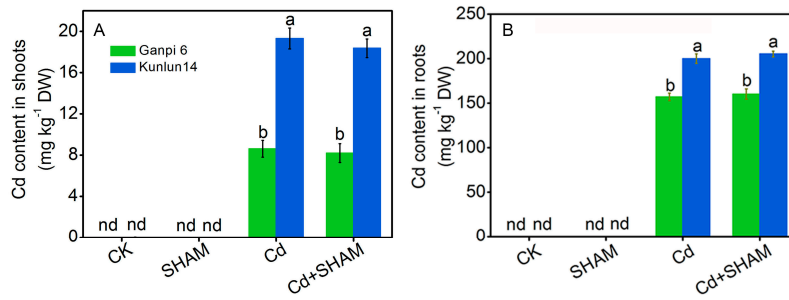


Supplemental materials.



Supplementary Figure.1. Effect of SHAM on Cd content in shoots (A) and roots (B) of two barley varieties under Cd Stress. In the experiment, 150 μ M Cd, 100 μ M SHAM were used. Bars represent mean \pm SE (n=3), and different lower case letters represent significant difference at $P < 0.05$. nd = not detectable.

Supplementary Table.1 Correlation coefficient between AP and the enzymatic activities, GSH, ASA, DHA, GSSG, NR, NOS in two barley roots.

| | AP | SOD | CAT | APX | GSH | AsA | DHA | GSSG | GR | GPX | DHAR | MDHAR | NR | NOS |
|----------|----------|---------|---------|----------|----------|---------|----------|----------|---------|---------|----------|---------|----------|----------|
| AP | 1.0000 | 0.2043 | 0.1456 | 0.0596 | 0.1970 | 0.0848 | -0.1164 | 0.0707 | 0.2181 | 0.1543 | -0.3200 | 0.1335 | -0.893* | -0.0878 |
| SOD | 0.2043 | 1.0000 | 0.2263 | 0.983** | -0.0346 | 0.4915 | -0.2460 | 0.958** | -0.2425 | 0.951** | -0.912* | 0.898* | -0.1912 | -0.0613 |
| POD | 0.1431 | -0.6299 | -0.1062 | -0.6051 | 0.4503 | -0.0091 | 0.4583 | -0.7635 | 0.7841 | -0.4353 | 0.6999 | -0.5568 | -0.5216 | -0.2576 |
| CAT | 0.1456 | 0.2263 | 1.0000 | 0.0726 | -0.6643 | 0.7485 | -0.7809 | 0.0961 | 0.2253 | 0.3264 | 0.1418 | 0.4231 | -0.3886 | 0.6897 |
| APX | 0.0596 | 0.983** | 0.0726 | 1.0000 | 0.0603 | 0.4331 | -0.1523 | 0.953** | -0.2244 | 0.936** | -0.936** | 0.879* | -0.1777 | -0.1430 |
| GSH | 0.1970 | -0.0346 | -0.6643 | 0.0603 | 1.0000 | -0.3307 | 0.946** | -0.1149 | 0.2644 | -0.0795 | -0.1525 | -0.1972 | -0.2893 | -0.968** |
| AsA | 0.0848 | 0.4915 | 0.7485 | 0.4331 | -0.3307 | 1.0000 | -0.6039 | 0.2883 | 0.5538 | 0.6675 | -0.1010 | 0.7508 | -0.7570 | 0.4459 |
| DHA | -0.1164 | -0.2460 | -0.7809 | -0.1523 | 0.946** | -0.6039 | 1.0000 | -0.2520 | 0.0878 | -0.3209 | -0.0274 | -0.4687 | -0.0195 | -0.945** |
| GSSG | 0.0707 | 0.958** | 0.0961 | 0.953** | -0.1149 | 0.2883 | -0.2520 | 1.0000 | -0.4797 | 0.872* | -0.956** | 0.7907 | 0.0858 | -0.0243 |
| GR | 0.2181 | -0.2425 | 0.2253 | -0.2244 | 0.2644 | 0.5538 | 0.0878 | -0.4797 | 1.0000 | -0.0067 | 0.4994 | 0.0242 | -0.886* | -0.0261 |
| GPX | 0.1543 | 0.951** | 0.3264 | 0.936** | -0.0795 | 0.6675 | -0.3209 | 0.872* | -0.0067 | 1.0000 | -0.7797 | 0.901* | -0.3780 | 0.0500 |
| DHAR | -0.3200 | -0.912* | 0.1418 | -0.936** | -0.1525 | -0.1010 | -0.0274 | -0.956** | 0.4994 | -0.7797 | 1.0000 | -0.6900 | -0.1108 | 0.3033 |
| MDHAR | 0.1335 | 0.898* | 0.4231 | 0.879* | -0.1972 | 0.7508 | -0.4687 | 0.7907 | 0.0242 | 0.901* | -0.6900 | 1.0000 | -0.3996 | 0.1758 |
| NR | -0.893* | -0.1912 | -0.3886 | -0.1777 | -0.2893 | -0.7570 | -0.0195 | 0.0858 | -0.886* | -0.3780 | -0.1108 | -0.3996 | 1.0000 | 0.1105 |
| NOS | -0.0878 | -0.0613 | 0.6897 | -0.1430 | -0.968** | 0.4459 | -0.945** | -0.0243 | -0.0261 | 0.0500 | 0.3033 | 0.1758 | 0.1105 | 1.0000 |
| Kunlun14 | | | | | | | | | | | | | | |
| AP | 1.0000 | 0.1619 | 0.0832 | 0.1341 | -0.3379 | 0.1252 | 0.2414 | 0.1601 | 0.2078 | 0.0873 | 0.0226 | 0.0860 | -0.918** | 0.0262 |
| SOD | 0.1619 | 1.0000 | 0.3753 | 0.4633 | -0.0931 | 0.4287 | -0.4721 | 0.917* | 0.953** | 0.4568 | -0.7198 | 0.884* | -0.3259 | 0.886* |
| POD | 0.2040 | -0.0257 | 0.1158 | -0.3506 | -0.2080 | 0.3997 | 0.5871 | -0.2797 | 0.1974 | 0.5113 | 0.4113 | 0.4114 | -0.5934 | -0.3674 |
| CAT | 0.0832 | 0.3753 | 1.0000 | 0.2812 | -0.0241 | 0.3712 | 0.4860 | 0.1905 | 0.3913 | 0.5882 | 0.2918 | 0.5430 | -0.813* | 0.0073 |
| APX | 0.1341 | 0.4633 | 0.2812 | 1.0000 | 0.7034 | -0.4656 | -0.3892 | 0.6472 | 0.2289 | -0.3366 | -0.4707 | 0.2963 | 0.0475 | 0.4541 |
| GSH | -0.3379 | -0.0931 | -0.0241 | 0.7034 | 1.0000 | -0.883* | -0.2094 | 0.2246 | -0.3343 | -0.7287 | -0.0700 | -0.1429 | 0.3671 | -0.0269 |
| AsA | 0.1252 | 0.4287 | 0.3712 | -0.4656 | -0.883* | 1.0000 | 0.2706 | 0.0560 | 0.6615 | 0.956** | 0.0147 | 0.5683 | -0.6893 | 0.1903 |
| DHA | 0.2414 | -0.4721 | 0.4860 | -0.3892 | -0.2094 | 0.2706 | 1.0000 | -0.7139 | -0.2846 | 0.4276 | 0.930** | -0.0635 | -0.6745 | -0.817* |
| GSSG | 0.1601 | 0.917* | 0.1905 | 0.6472 | 0.2246 | 0.0560 | -0.7139 | 1.0000 | 0.7608 | 0.0730 | -0.849* | 0.6846 | 0.0198 | 0.943** |
| GR | 0.2078 | 0.953** | 0.3913 | 0.2289 | -0.3343 | 0.6615 | -0.2846 | 0.7608 | 1.0000 | 0.6783 | -0.5798 | 0.935** | -0.4992 | 0.7667 |
| GPX | 0.0873 | 0.4568 | 0.5882 | -0.3366 | -0.7287 | 0.956** | 0.4276 | 0.0730 | 0.6783 | 1.0000 | 0.1419 | 0.6822 | -0.863* | 0.1115 |
| DHAR | 0.0226 | -0.7198 | 0.2918 | -0.4707 | -0.0700 | 0.0147 | 0.930** | -0.849* | -0.5798 | 0.1419 | 1.0000 | -0.3695 | -0.3796 | -0.939** |
| MDHAR | 0.0860 | 0.884* | 0.5430 | 0.2963 | -0.1429 | 0.5683 | -0.0635 | 0.6846 | 0.935** | 0.6822 | -0.3695 | 1.0000 | -0.6537 | 0.5818 |
| NR | -0.918** | -0.3259 | -0.813* | 0.0475 | 0.3671 | -0.6893 | -0.6745 | 0.0198 | -0.4992 | -0.863* | -0.3796 | -0.6537 | 1.0000 | 0.1305 |
| NOS | 0.0262 | 0.886* | 0.0073 | 0.4541 | -0.0269 | 0.1903 | -0.817* | 0.943** | 0.7667 | 0.1115 | -0.939** | 0.5818 | 0.1305 | 1.0000 |

* and ** represent $P < 0.05$ and 0.01 , respectively.