Electronic Supplementary Material (ESI) for Metallomics.

Supplementary Information S-1: Detailed methodology for the measurement of activities of various enzymes.

ATP sulphurylase (APS; EC 2.7.7.4)

The APS activity was determined according to the molybdolysis assay. The reaction mixture contained 400 µl of assay buffer [Tris-HCl buffer (80 mM; pH 8), $MgCl_2$ (7 mM), sodium molybdate (5mM), ATP (2 mM) and inorganic pyrophosphatase (0.03 units)] and 100 µl of enzyme extract. A blank reaction was run for each extract where sodium molybdate was absent. The reaction was incubated for 15 min and then it was stopped using 1 ml of sodium acetate (0.5 M; pH 4). The development of pyrophosphate in the reaction was assayed using developer reagent [ammonium molybdate (1%), potassium antimony tartrate (0.05%), sodium ascorbate (1.5%), H_2SO_4 (11 M)]. The developer reagent (200 µl) was added to the reaction mixture and color was allowed to develop for 10 min and then absorbance was monitored at 660 nm. The activity was given in terms of units mg^{-1} protein (1 unit was considered equivalent to 1 µmol of PPi produced min^{-1}).

5'-adenylylsulfate reductase (APR; EC 1.8.4.9)

The activity of APR was assayed by the ferricyanide reduction method based on the reversal of the physiological reaction. Reaction mixture contained 400 µl of assay buffer [AMP (120 µM), $K_3Fe(CN)_6$ (150 µM), Na_2SO_3 (1.2 mM), EDTA (240 µM) and Tris–HCl (100 mM; pH 7.2)] and 50 µl of enzyme extract. The rate of ferricyanide reduction was monitored at 420 nm.

Cysteine synthase (CS; EC 2.5.1.47)

For CS activity, the reaction mixture contained 280 µl of assay buffer [potassium phosphate buffer (50 mM; pH 8.0), sodium sulfide (4mM) and O-acetyl L-serine (12.5 mM)] and 100 µl of enzyme extract. After 30 min incubation at 30 C, the reaction was terminated by the addition of 100 µl of tricloroacetic acid (7.5%) and the amount of cysteine synthesized was determined using acid ninhydrin reagent. For preparation of every 10 ml of acid ninhydrin reagent, 250 mg of ninhydrin was dissolved in 6 ml glacial acetic acid and 4 ml HCl. Reaction mixture contained equal quantities of supernatant, glacial acetic acid and acid ninhydrin reagent. Mixture was heated for 10-15 min at 95 C, and then cooled rapidly to room temperature and absorbance was recorded at 560 nm. Cysteine content was calculated from the standard curve prepared using known concentration of cysteine (L-cysteine hydrochloride, Sigma) and is expressed as nmol g^{-1} FW.

Supplementary Information S-2: Details of the primers used for the quantitative real-time PCR of different sulphate and arsenic transporters in rice.

Gene Name	Transcript Identifier	Forward primer (5'—3')	Backward primer (5'—3')	Amplicon length (bp)
OsSultr1;1	LOC_Os03g09970.1	AGTATGGTCTGCTAATTGCGGTTG	AACTGTTCTGGGTCGTGTAACTTG	74
OsSultr1;2	LOC_Os03g09980.1	TATGGCTTGCTCATTGCGGTTG	TGGAAGGTTGCCAAGTAAAGCTG	90
OsSultr1;3	LOC_Os08g31410.1	CTCAAACTATGTCCGGGAGAGAAC	GAGCATGGATGCCACTTGTATCG	143
OsSultr2;1	LOC_Os03g09940.1	TCCTTCGGCTTGTTCAGGTTGG	CGTCGGTGCTGTTGGTGAAATG	148
OsSultr2;2	LOC_Os03g09930.1	TGGAGATTGGTCTTTCAGTTGCAC	GTTTCGTGAACCACTGGATACTGC	145
OsSultr3;1	LOC_Os10g28440.1	ATCGGCATCATCGACTACAAGGC	CCGGAGAATCGATATCCCAACTGC	147
OsSultr3;2	LOC_Os03g06520.1	GACGAGCATGCTGGATGAACTCAG	GGGTTCGCCAACACAATCTGAAG	69
OsSultr3;3	LOC_Os04g55800.1	CAACAGAGAAGCATGGACTAGAGC	GAAATGACCATGAGCATCATTCGC	95
OsSultr3;4	LOC_Os06g05160.1	CATCATCCTCGACATGAGTGCTG	AGTTGTACAGCCTCTCGGTCAC	146
OsSultr3;6	LOC_Os01g52130.1	TCTCCCATCTACTTCGTCAATGCG	AGTTGTCGACAGAAGTGACACCAC	145
OsSultr4;1	LOC_Os09g06499.1	TGCTTGATGGGATTGCTAAGGC	TGCTTCTCGTAACGCTGTAGCC	142
OsLsi2	LOC_Os03g0107300	ATCTGGGACTTCATGGCCC	ACGTTTGATGCGAGGTTGG	101
Tubulin	LOC_Os01g59150.1	TTTGTGTTCGGGCAATCTGGTG	AGTGGCATACTTGGAATCCTTGC	145