

Heterologous expression of *Ceratophyllum demersum* phytochelatin synthase, *CdPCS1*, in rice leads to lower arsenic accumulation in grain

Manju Shri^{ab}, Richa Dave^a, Sanjay Diwedi^a, Devesh Shukla^a, Ravi Kesari^a, Rudra Deo Tripathi^{ab}, Prabodh Kumar Trivedi^{ab}, Debasis Chakrabarty^{ab*}

^aCouncil of Scientific and Industrial Research - National Botanical Research Institute (CSIR-NBRI), Rana Pratap Marg, Lucknow-226001, INDIA

Tel: +91-522-2297923

Fax: 91-522-2205836, 2205839

^bAcademy of Scientific and Innovative Research (AcSIR), Anusandhan Bhawan, 2 Rafi Marg, New Delhi-110 001, India

*Corresponding author

e-mail: chakrabartyd@nbri.res.in

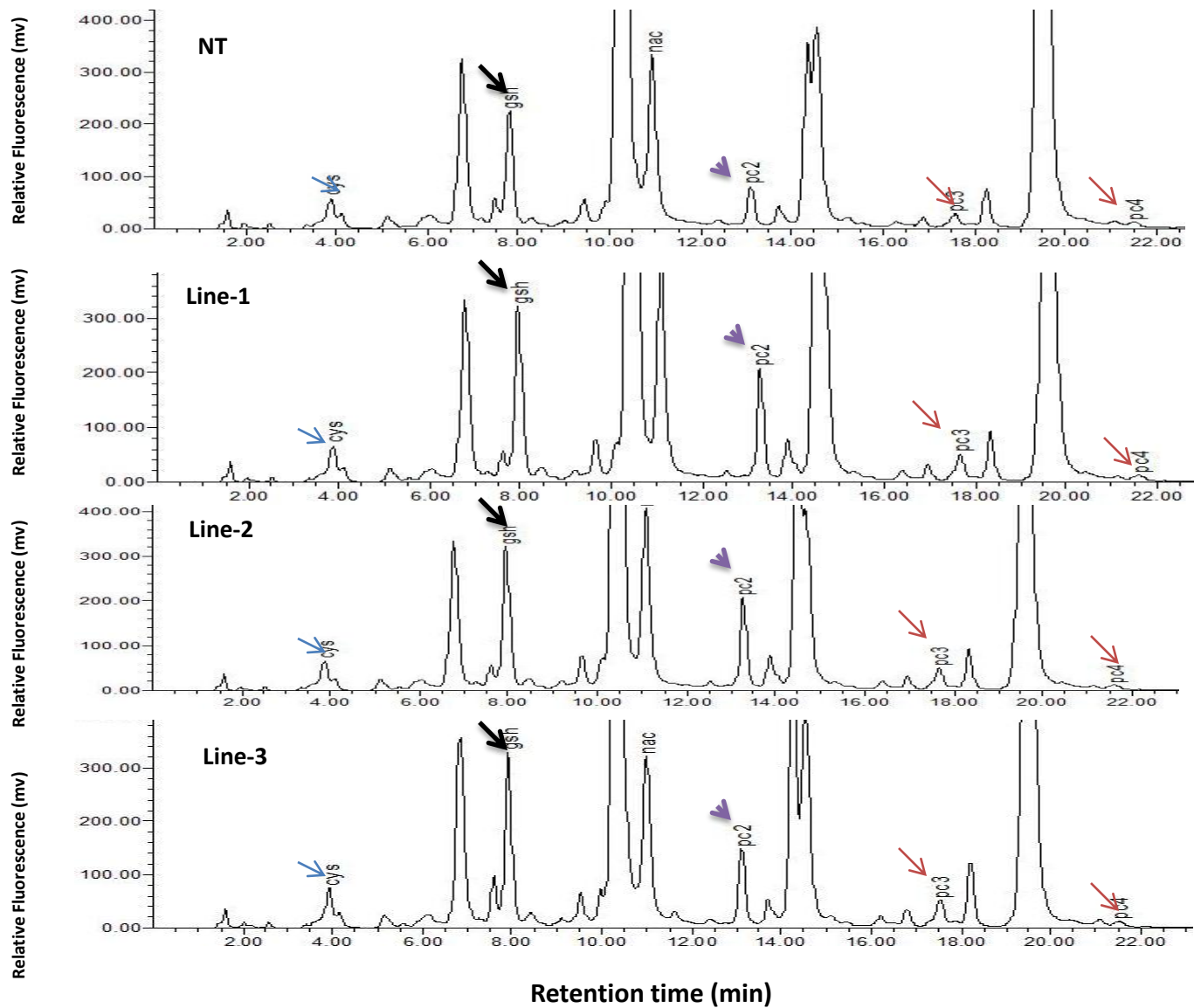
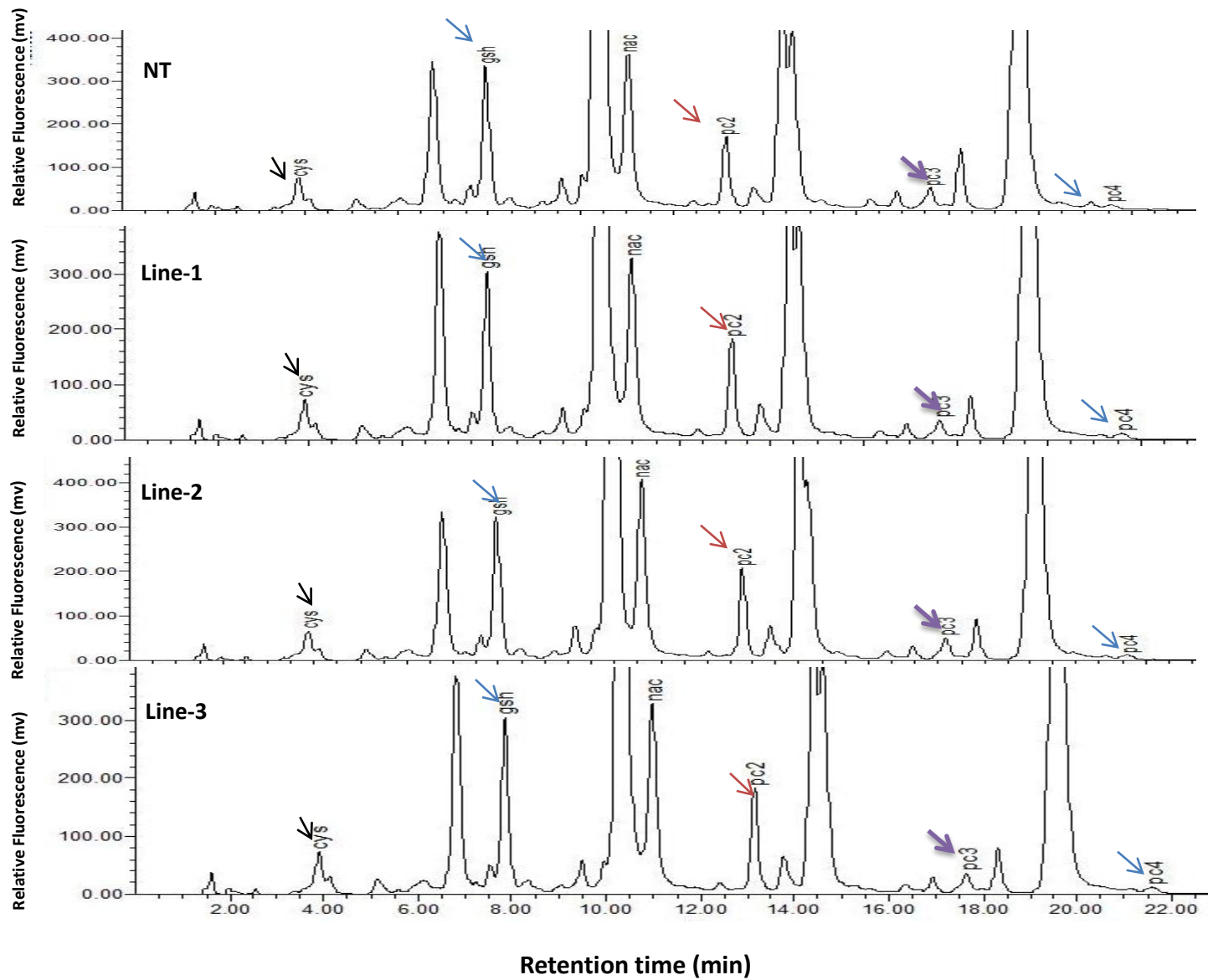


Figure S1 Fluorescence HPLC chromatograms of the mBBr-labeled plant extracts from NT and transgenic lines. Shoot extracts of NT and *CdPCS1* expressing transgenic lines grown in the presence of 100 μ M Na₂AsO₄ were derivatized with mBBr and separated by HPLC. Peaks corresponding to Cys, GSH, PC2, PC3 and PC4 standards are indicated in the chromatogram.



Retention time (min)

Figure S2 Fluorescence HPLC chromatograms of the mBBr-labeled plant extracts from NT and transgenic lines. Root extracts of NT and *CdPCS1* expressing transgenic lines grown in the presence of 100 μ M Na₂AsO₄ were derivatized with mBBr and separated by HPLC. Peaks corresponding to Cys, GSH, PC2, PC3 and PC4 standards are indicated in the chromatogram.

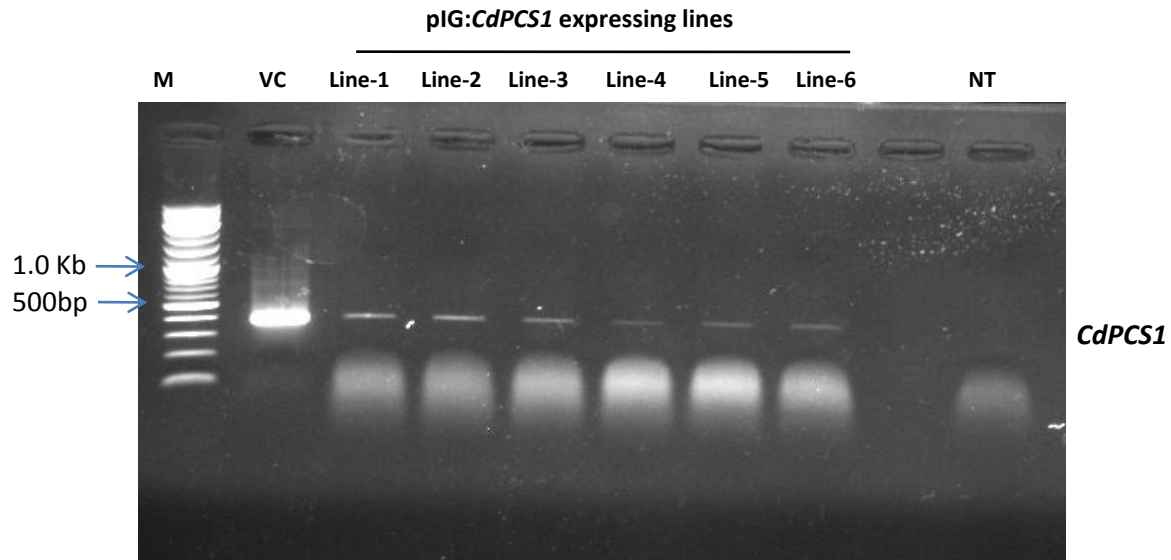


Figure S 3. Confirmation of the presence of *CdPCS1* in transgenic lines through genomic DNA PCR. Lane-M represent O' Range Ruler™ 100bp+500bp DNA ladder, VC represent vector control and NT represents non transgenic control. PCR amplification was carried out using gene-specific *CdPCS1*-RTF and *CdPCS1*-RTR primers.

Table S1. Relative accumulation of As in different tissues of transgenic lines with respect to NT

	Grain (%)	Husk (%)	Shoot (%)	Root (%)
Line-1	-46.07	-55.20	53.18	213.81
Line-2	-59.21	-64.19	25.61	327.39
Line-3	-48.44	-53.32	16.18	224.16