Electronic Supplementary Material (ESI) for Biomaterials Science.

Intranasal delivery of phenytoin-loaded nanoparticles to the brain suppresses pentylenetetrazol-induced generalized tonic clonic seizures in epilepsy mouse model

Amal Yousfan[a], Noelia Rubio[b], Abdul Hakim Nattouf[a,] Mohammad Al-Ali[c], Houmam Kafa[c*]
[a] Department of Pharmaceutics and Pharmaceutical Technology, Pharmacy College, Damascus University, Syria.
[b] Department of Chemistry and Materials, Imperial College London, SW7 2AZ, UK
[c] Department of Molecular Biology and Biotechnology, Atomic Energy Commission of Syria, Damascus, Syria.
*Corresponding author. Tel: +963940749813
E-mail address: hgkafa@gmail.com (Houmam Kafa)

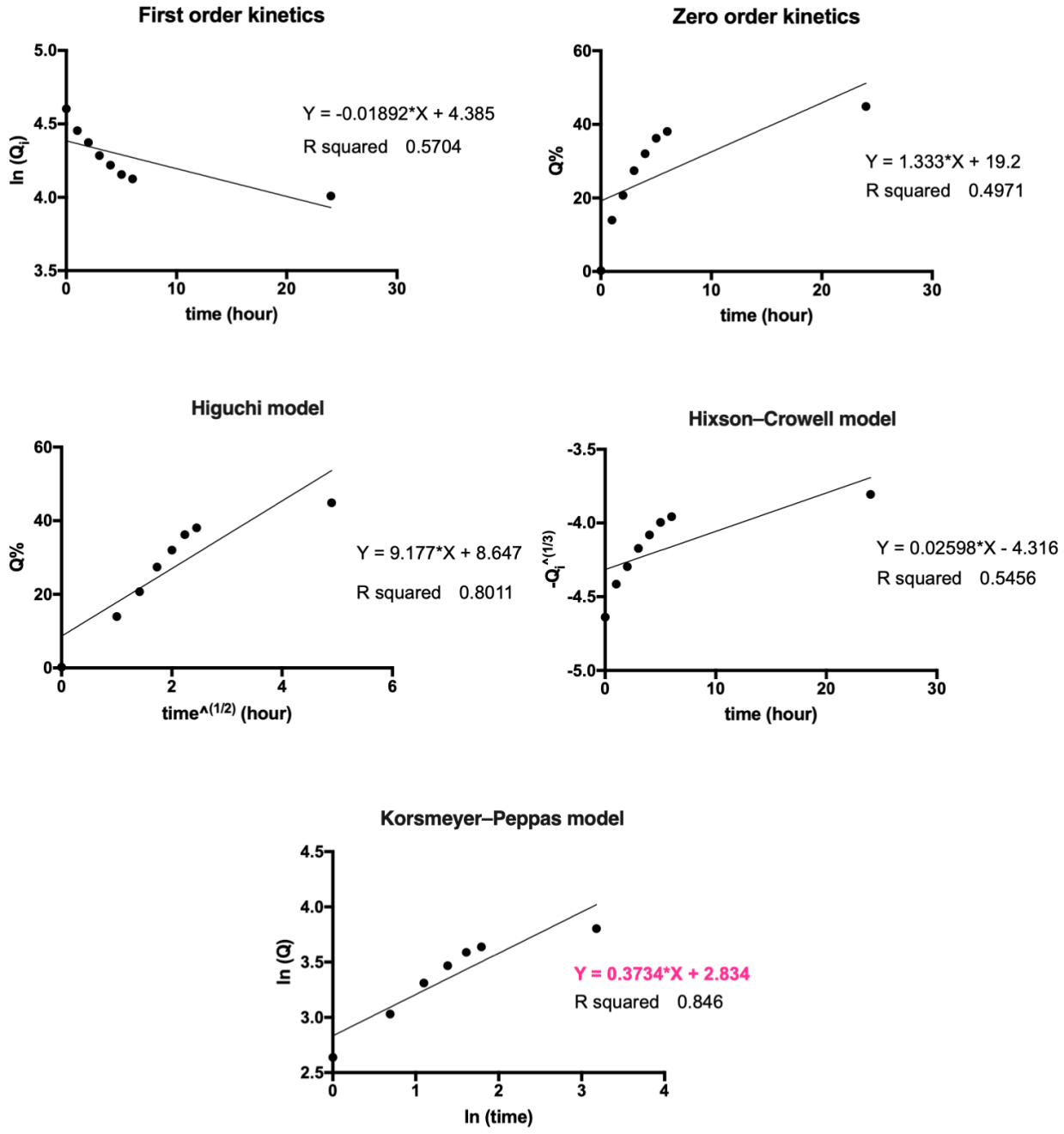

Figure S1. Drug release kinetics of $L_{10}C_i$+. Best fitted models for $L_{10}C_i$ according to the highest correlation (R^2) value were Higuchi (R^2 = 0.811) and Korsmeyer–Peppas model (R^2 =0.846) with release exponent (n)= 0.373.

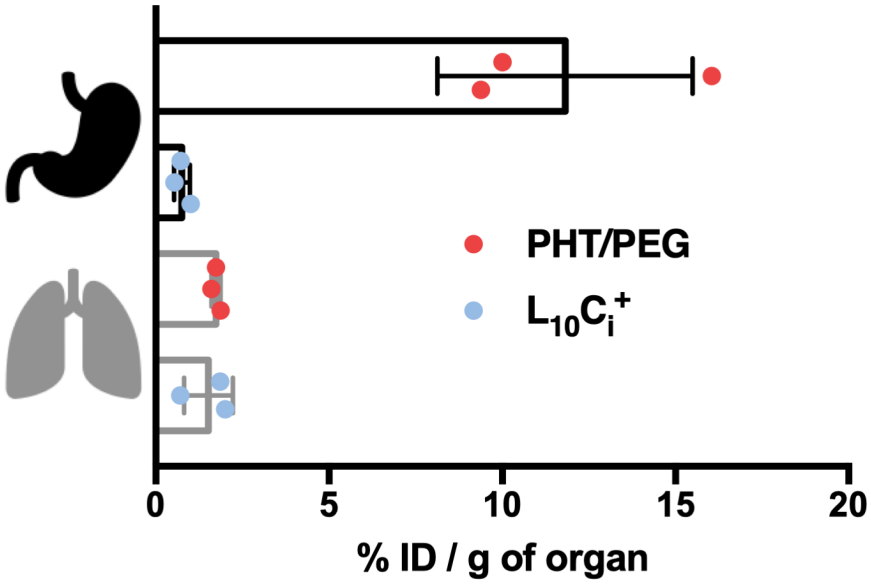

Figure S2. Dosing efficiency of $L_{10}C_i^+$. Negligible amounts of PHT were detected in the

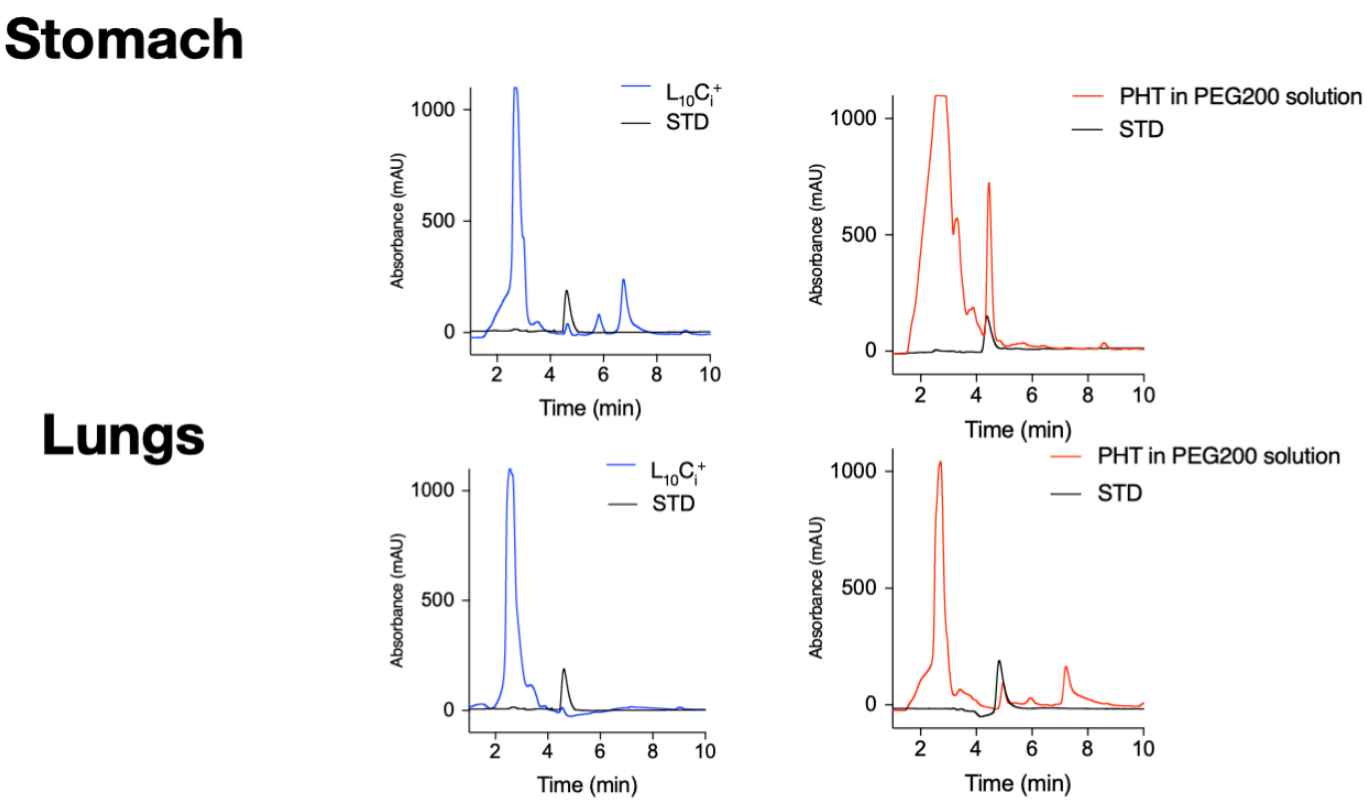

Figure S3. HPLC chromatograms of accumulated amounts of PHT in stomach and lungs following 5 min of $L_{10}C_i^+$ and PHT/PEG administration at certain time points. PHT peaks in stomach and lungs were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

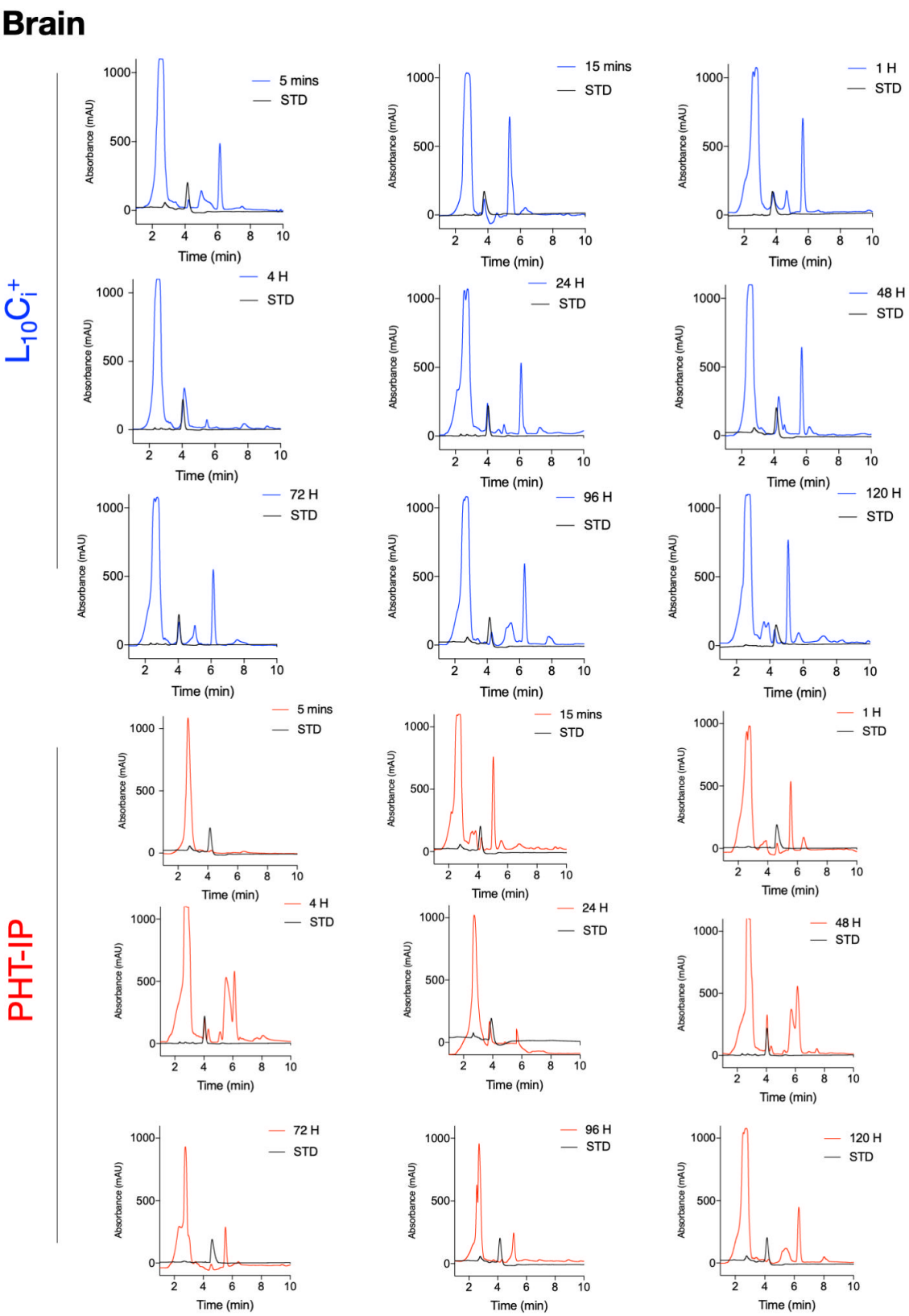

Figure S4. HPLC chromatograms of accumulated amounts of PHT in brain following $L_{10}C_i^+$ and PHT-IP administration at certain time points. PHT peaks in brain were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

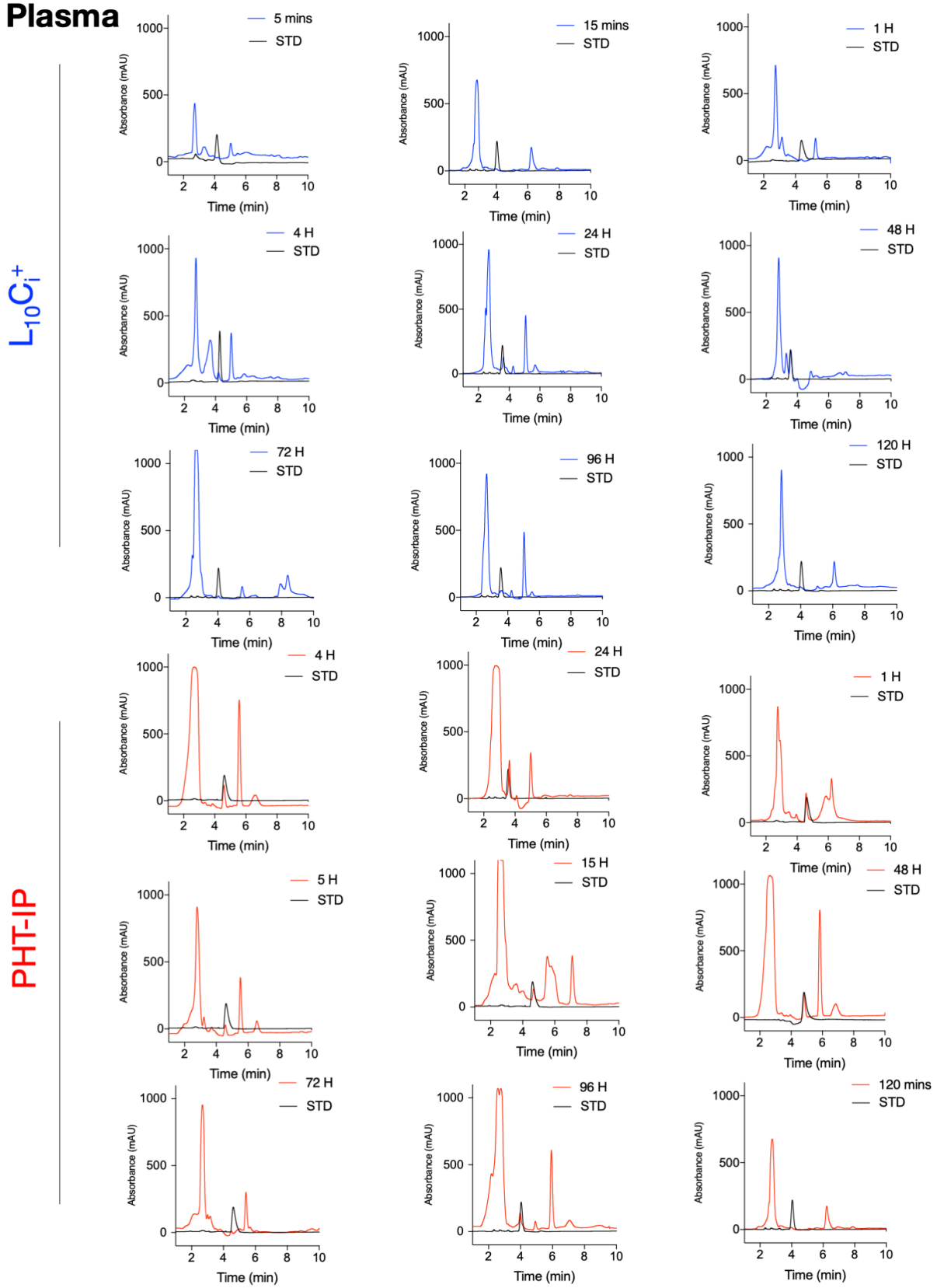

Figure S5. HPLC chromatograms of accumulated amounts of PHT in plasma following $L_{10}C_i^+$ and PHT-IP administration at certain time points. PHT peaks in plasma were interrupted with the standard peak of PHT (50 μg/ ml), identified as a well defined peak by this method, and quantified as Area.

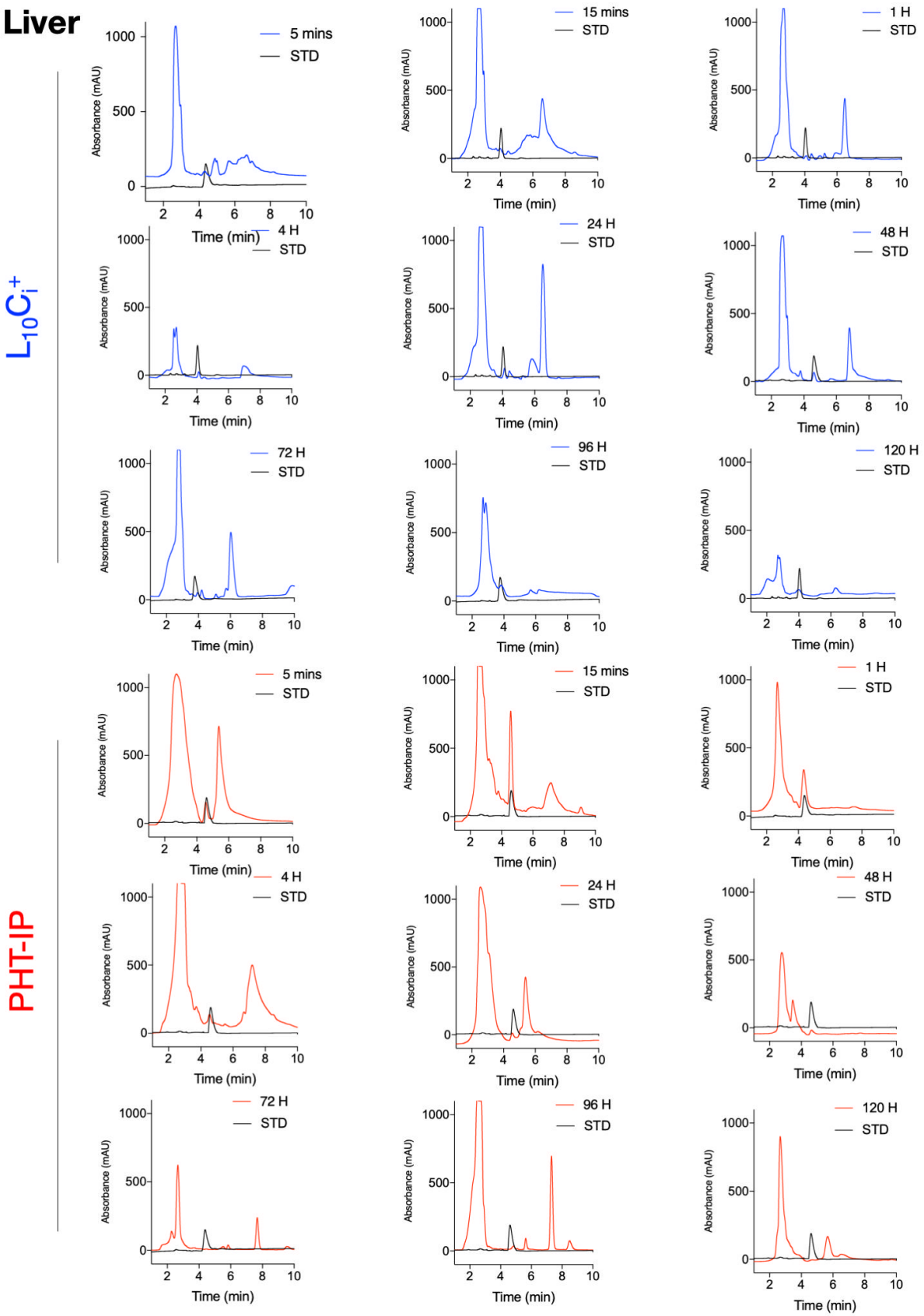

Figure S6. HPLC chromatograms of accumulated amounts of PHT in liver following $L_{10}C_i^+$ and PHT-IP administration at certain time points. PHT peaks in liver were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

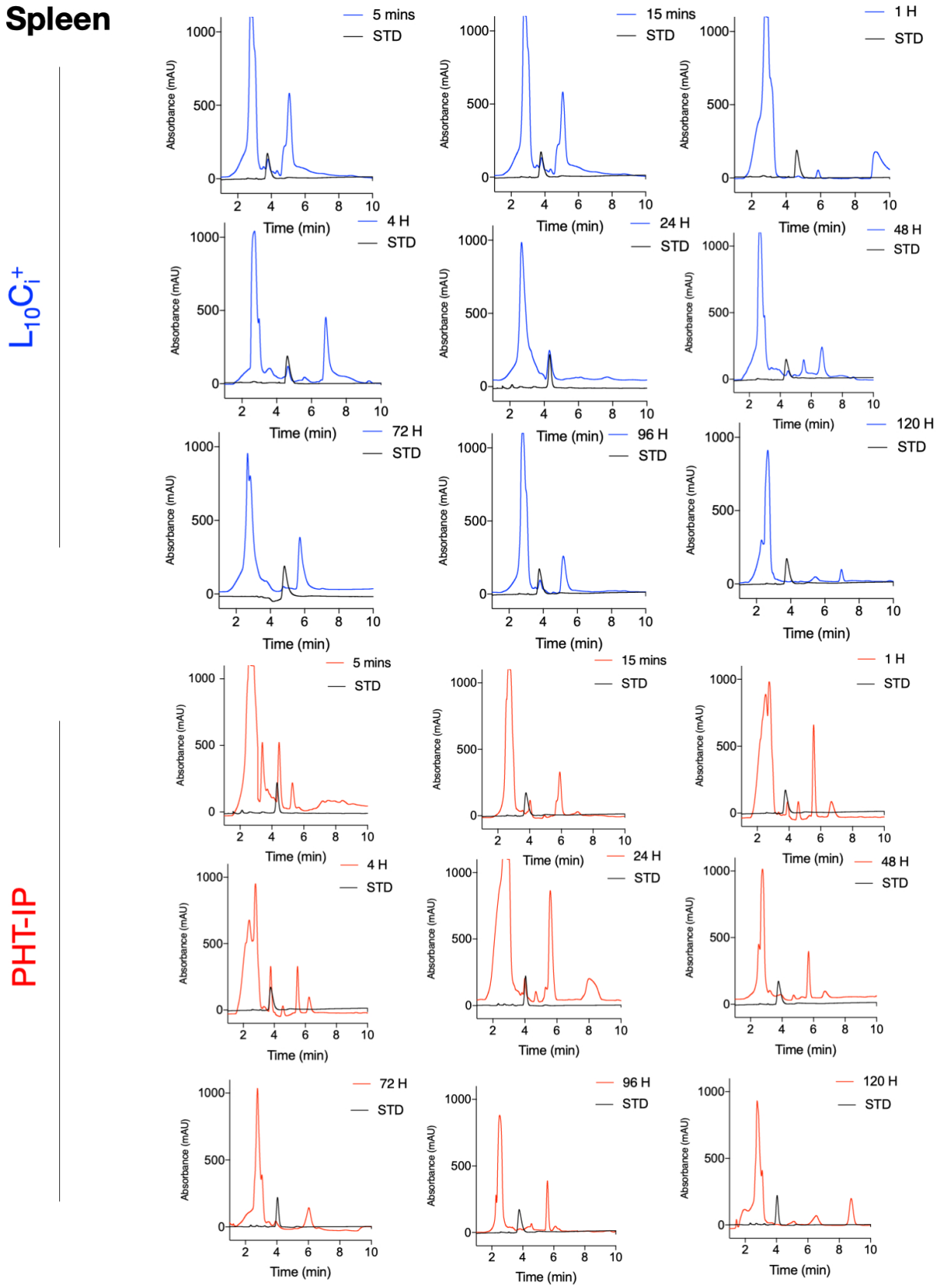

Figure S7. HPLC chromatograms of accumulated amounts of PHT in spleen following $L_{10}C_i^+$ and PHT-IP administration at certain time points. PHT peaks in spleen were interrupted with the standard peak of PHT (50 μg/ ml), identified as a well defined peak by this method, and quantified as Area.

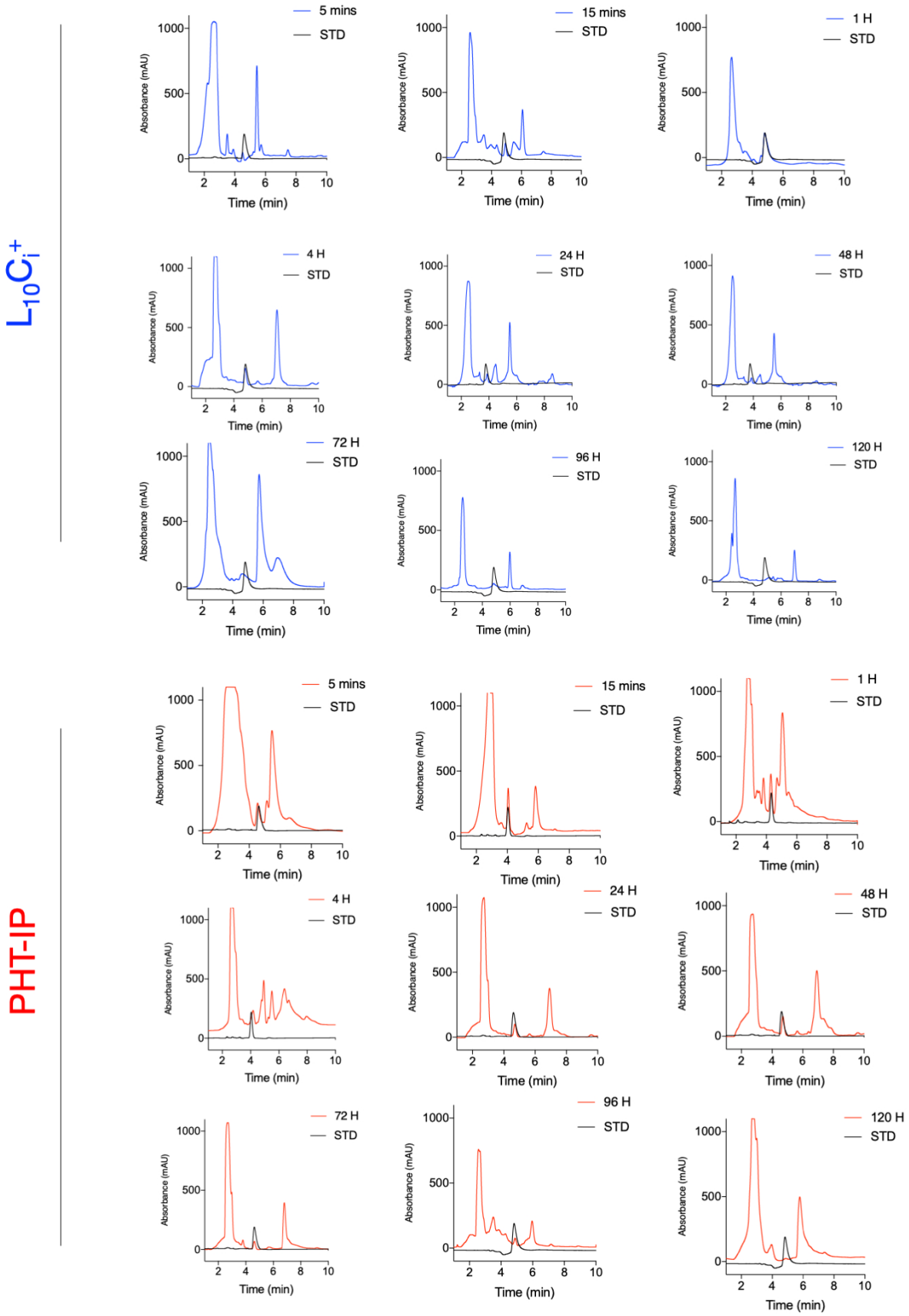

Figure S8. HPLC chromatograms of accumulated amounts of PHT in kidneys following $L_{10}C_i^+$ and PHT-IP administration at certain time points. PHT peaks in kidneys were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

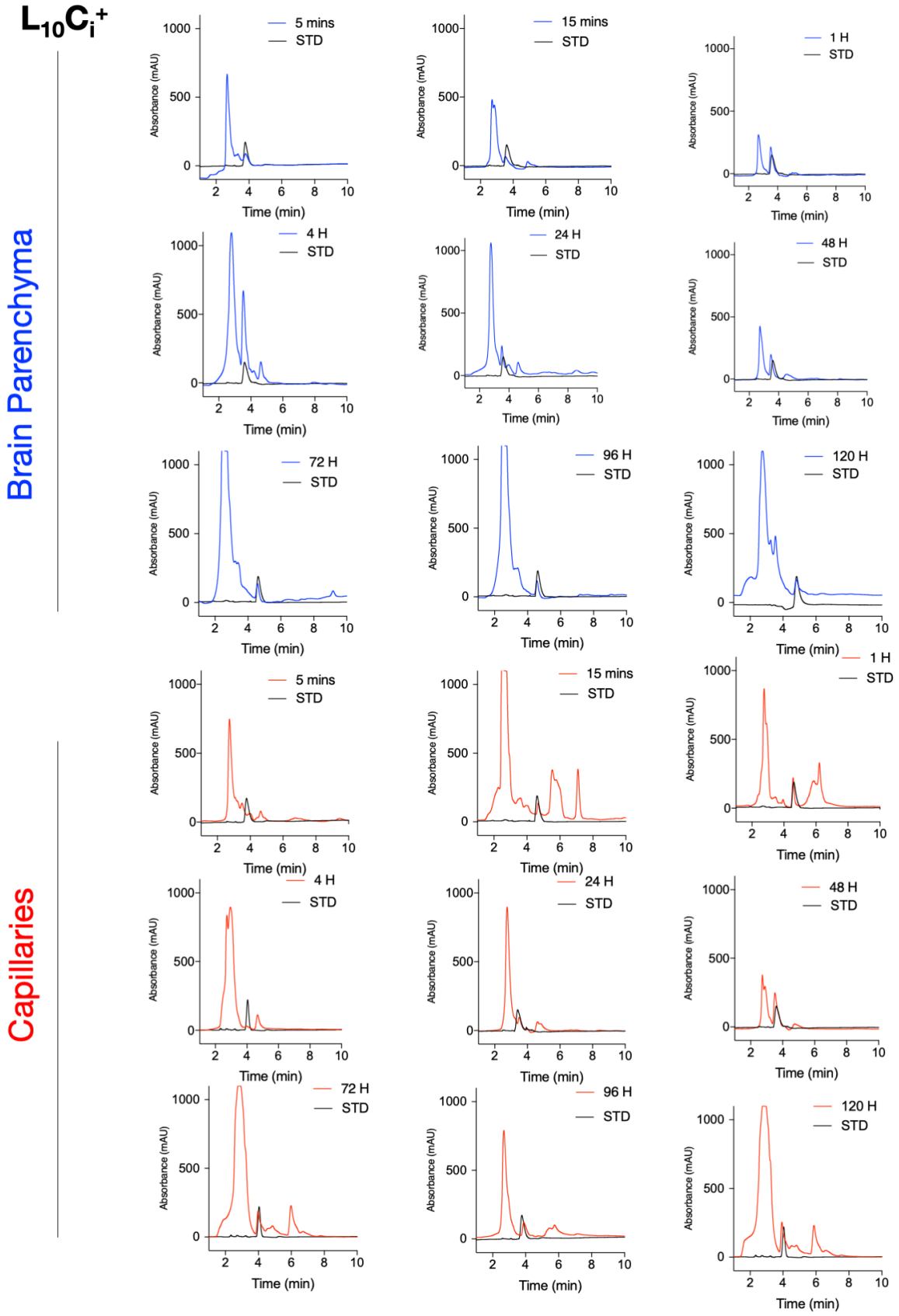

Figure S9. HPLC chromatograms of accumulated amounts of PHT in brain parenchyma and capillaries following following 4 h of $L_{10}C_i^+$ administration. PHT peaks in brain parenchyma and capillaries were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

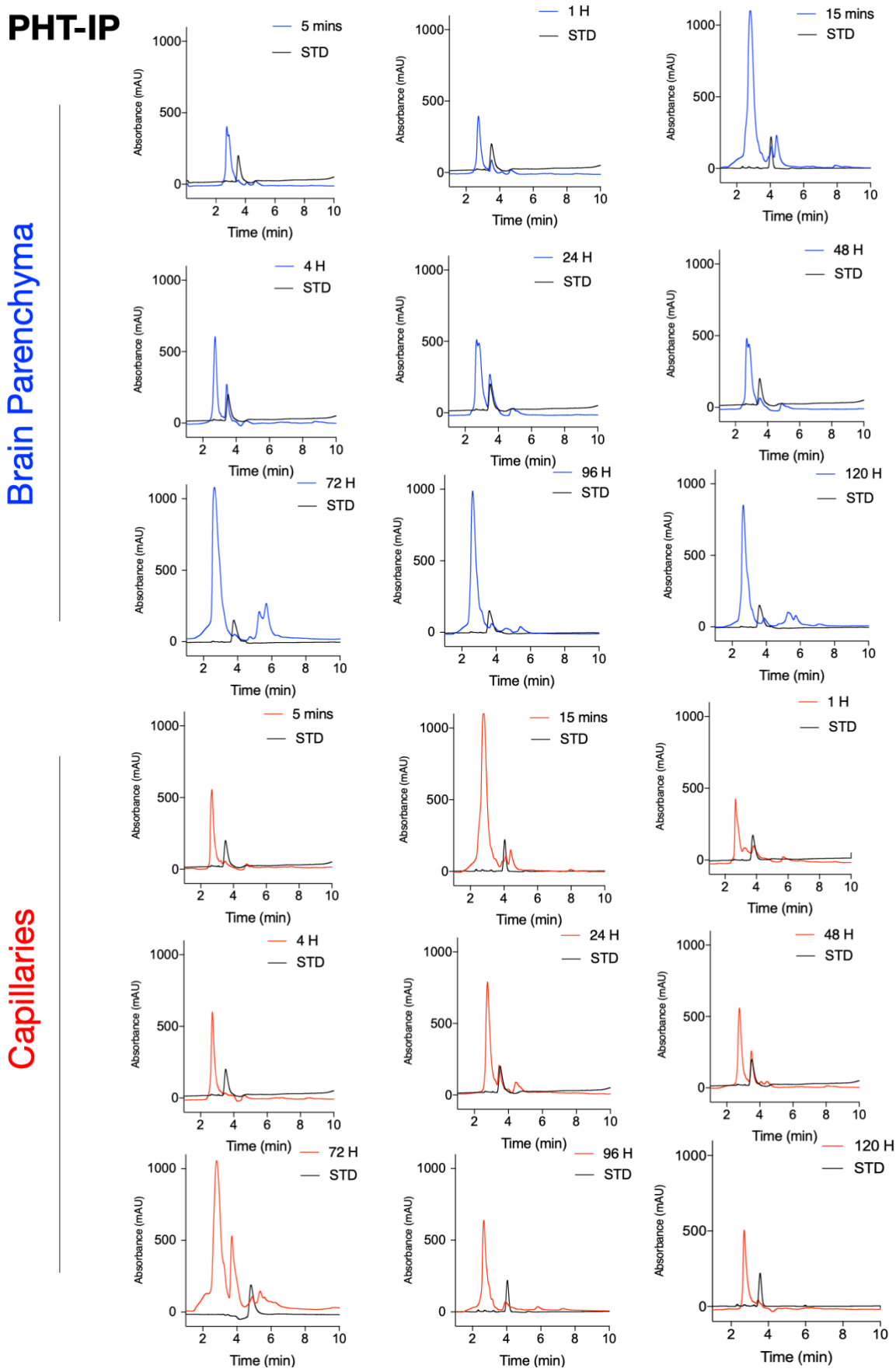

Figure S10. HPLC chromatograms of accumulated amounts of PHT in brain parenchyma and capillaries following 4 h of PHT-IP administration. PHT peaks in brain parenchyma and capillaries were interrupted with the standard peak of PHT (50 µg/ ml), identified as a well defined peak by this method, and quantified as Area.

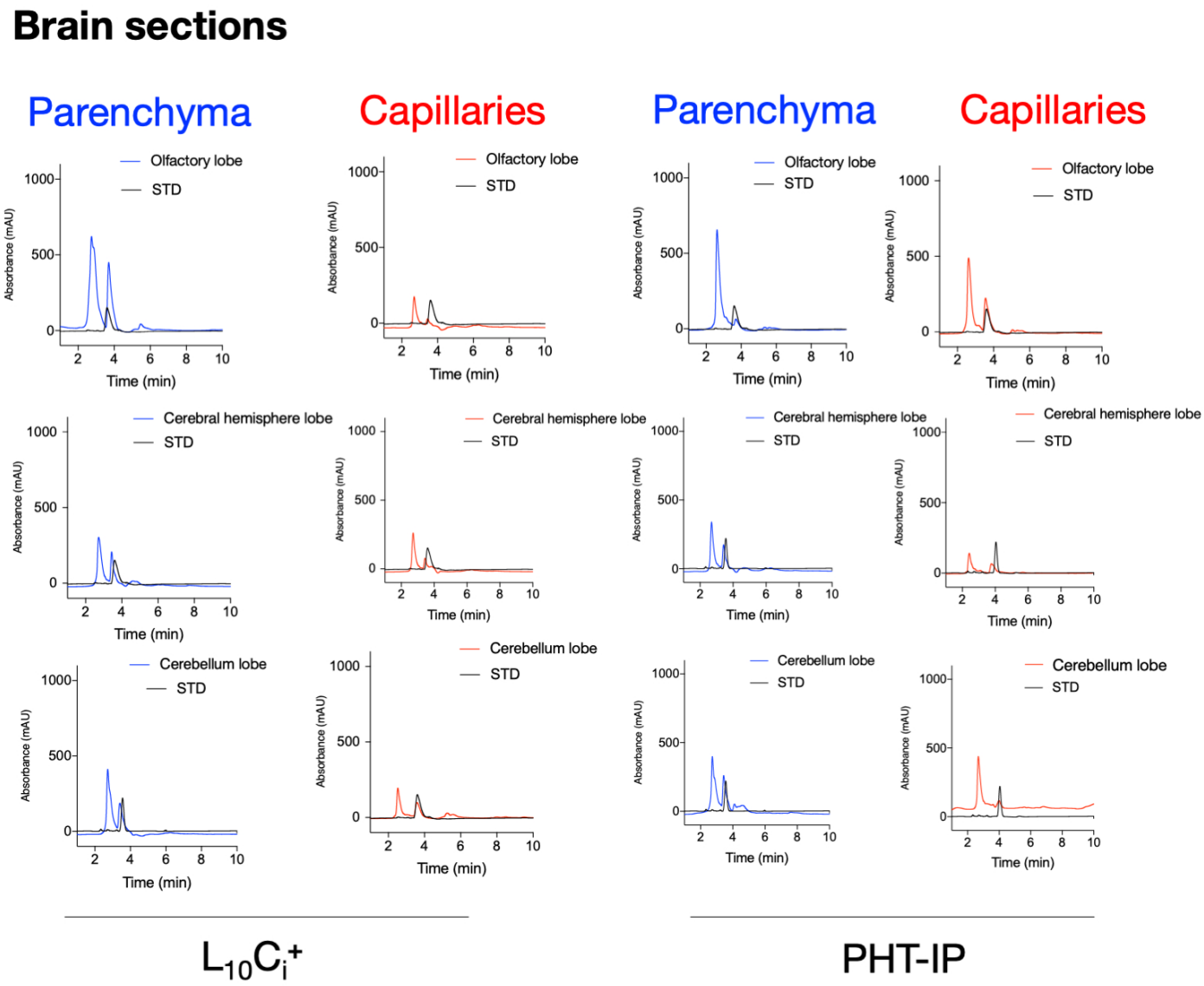

Figure S11. HPLC chromatograms of accumulated amounts of PHT in brain parenchyma and capillaries in brain sections following 4 h of $L_{10}C_i^+$ and PHT-IP administration. PHT peaks in brain parenchyma and capillaries were interrupted with the standard peak of PHT (50 µg/ml), identified as a well defined peak by this method, and quantified as Area.