

Electronic Supplementary Material

Method development for the certification of a ginsenoside calibration solution via liquid chromatography with ultraviolet/visible absorbance and mass spectrometric detection

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Table S1. Mobile phase gradient for the preliminary LC/UV separations of 8 ginsenosides.

| Gradient A | | | Gradient B | | |
|------------|----------------------|---------|------------|----------------------|---------|
| Time | H ₂ O (%) | ACN (%) | Time | H ₂ O (%) | ACN (%) |
| -3.0 | 80 | 20 | -3.0 | 80 | 20 |
| 0.0 | 80 | 20 | 0.0 | 80 | 20 |
| 10.0 | 77 | 23 | 10.0 | 77 | 20 |
| 29.0 | 58 | 42 | 30.0 | 50 | 50 |
| 30.0 | 0 | 100 | 31.0 | 0 | 100 |

| Gradient C | | | Gradient D | | |
|------------|----------------------|---------|------------|----------------------|---------|
| Time | H ₂ O (%) | ACN (%) | Time | H ₂ O (%) | ACN (%) |
| -3.0 | 79 | 21 | -3.0 | 82 | 18 |
| 0.0 | 79 | 21 | 0.0 | 82 | 18 |
| 5.0 | 79 | 21 | 10.0 | 82 | 18 |
| 25.0 | 50 | 50 | 30.0 | 50 | 50 |
| 30.0 | 0 | 100 | | | |

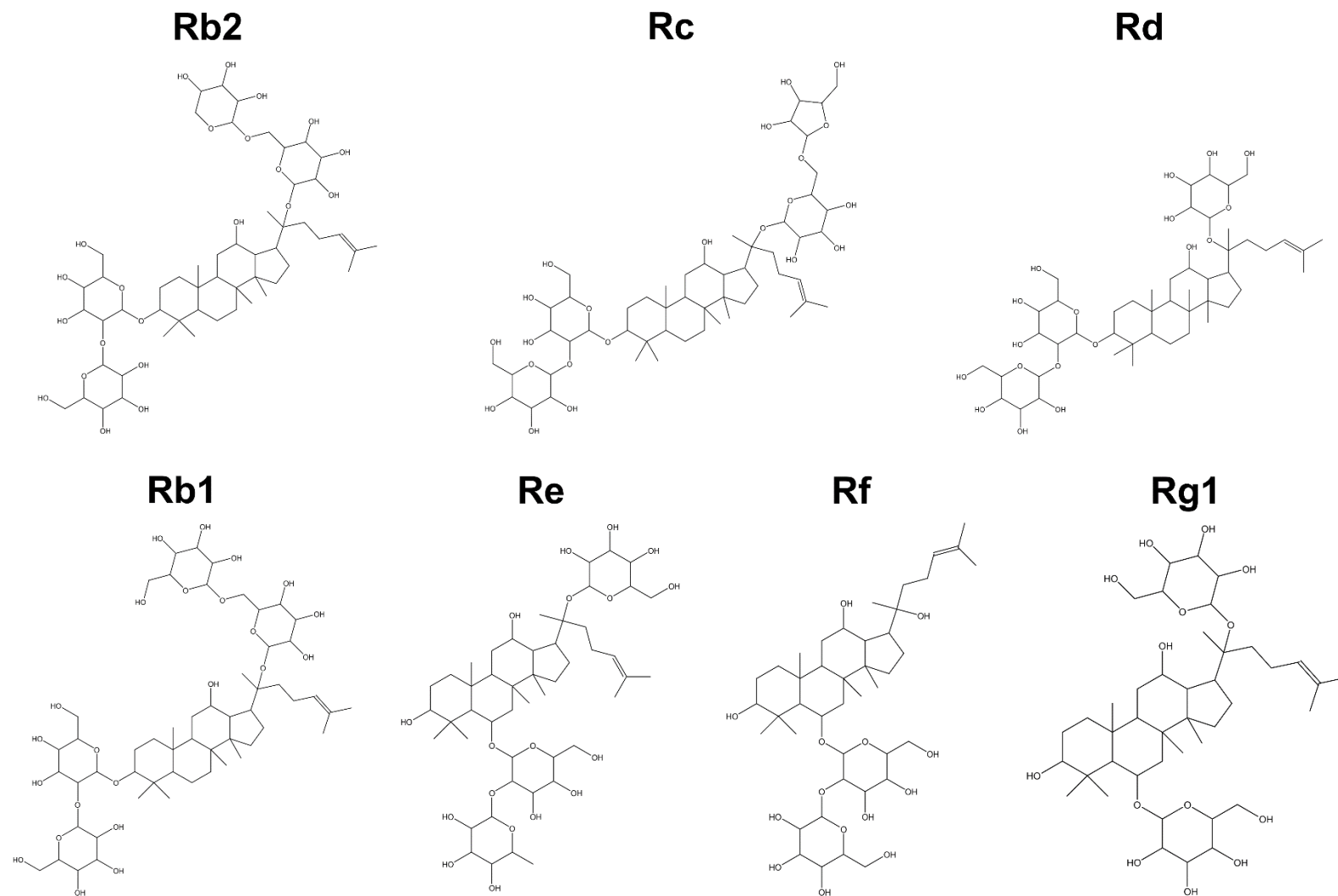


Fig. S1. Molecular structures for the seven ginsenosides in SRM 3389.

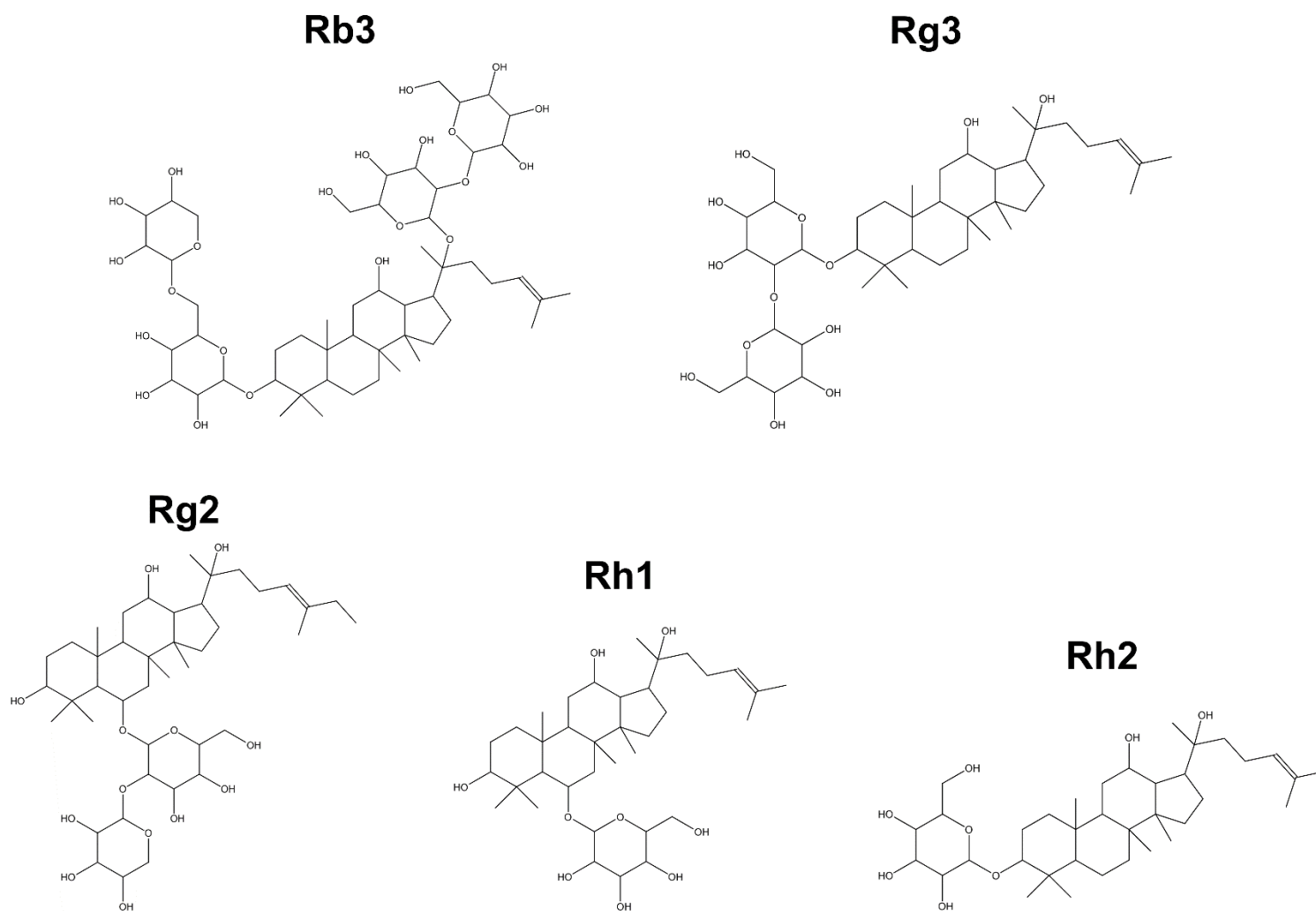


Fig. S2. Molecular structures for the five ginsenosides included in the present study not in SRM 3389.

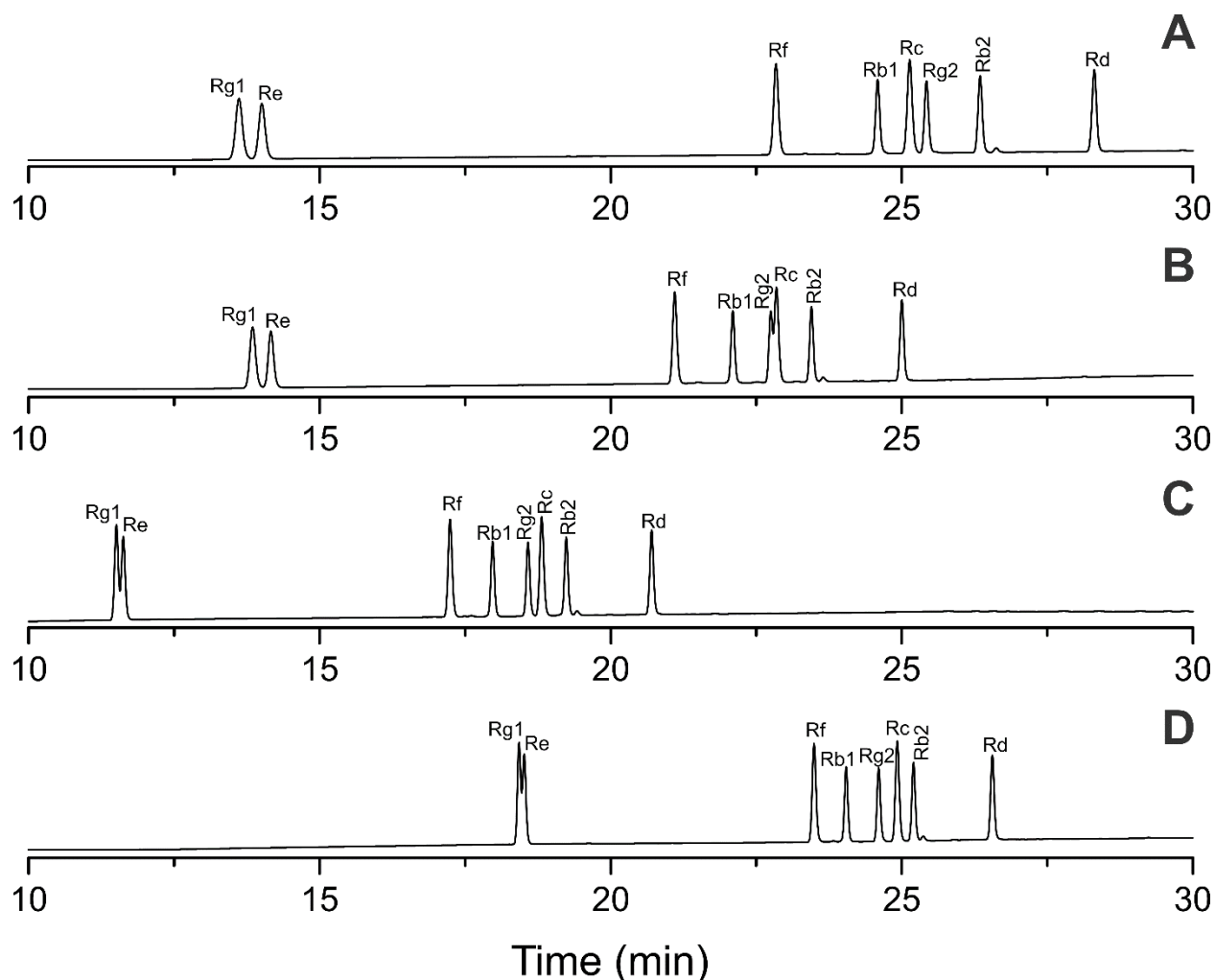


Fig. S3. LC separations of an eight ginsenoside mixture under the following mobile phase programs using H₂O and ACN: (A) linear gradient from 20 % ACN to 23 % ACN over 10 min and linear gradient to 42 % ACN over 19 min; (B) linear gradient from 20 % ACN to 23 % ACN over 10 min and linear gradient to 50 % ACN over 20 min; (C) isocratic at 21 % ACN for 5 min, linear gradient to 50 % ACN over 20 min, and linear gradient to 100 % ACN over 5 min; (D) isocratic at 18 % ACN for 10 min and linear gradient to 50 % ACN over 20 min.

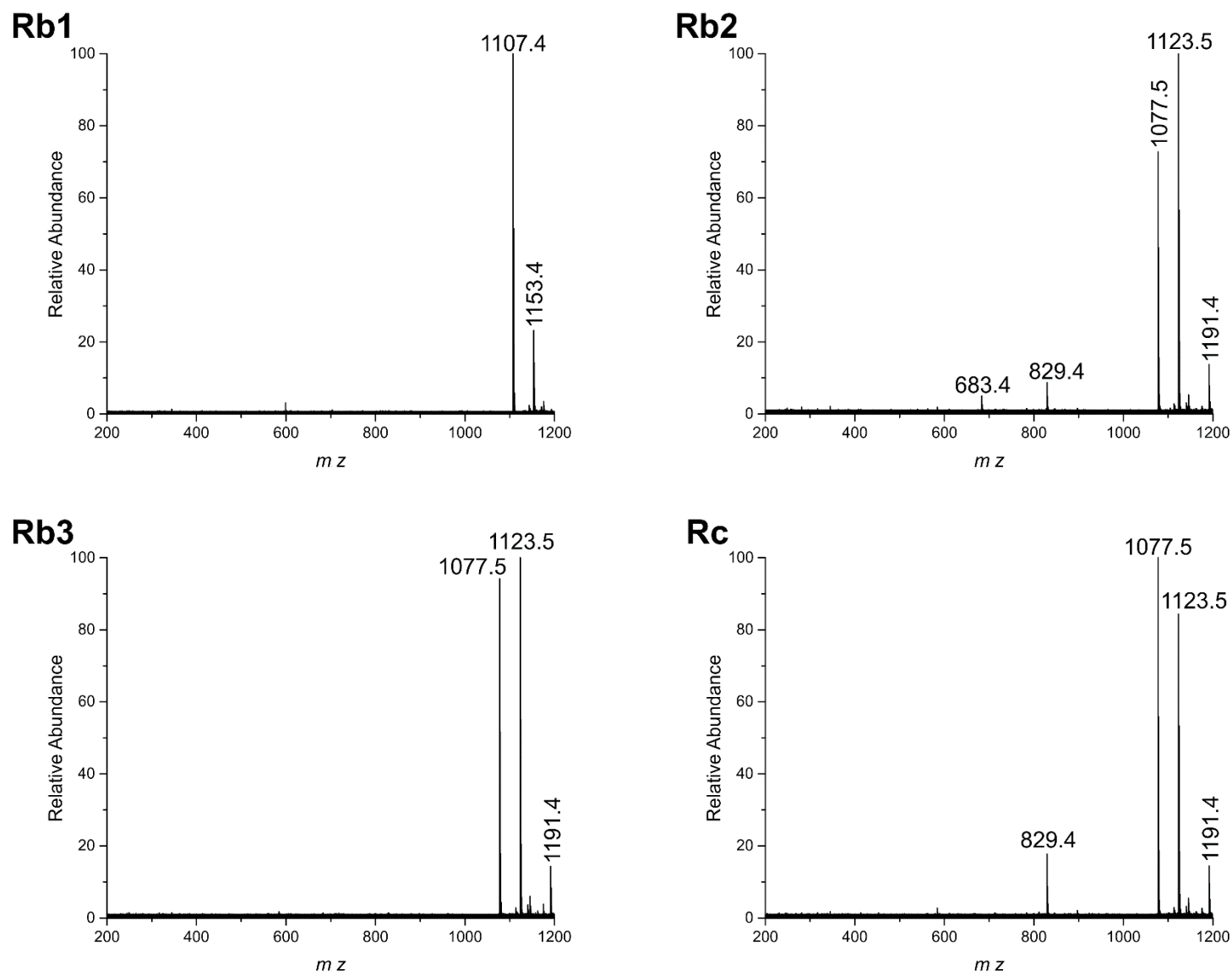


Fig. S4. Mass spectra of ginsenoside Rb1 (1101.31 g/mol), Rb2 (1079.29 g/mol), Rb3 (1079.29 g/mol), and Rc (1079.29 g/mol).

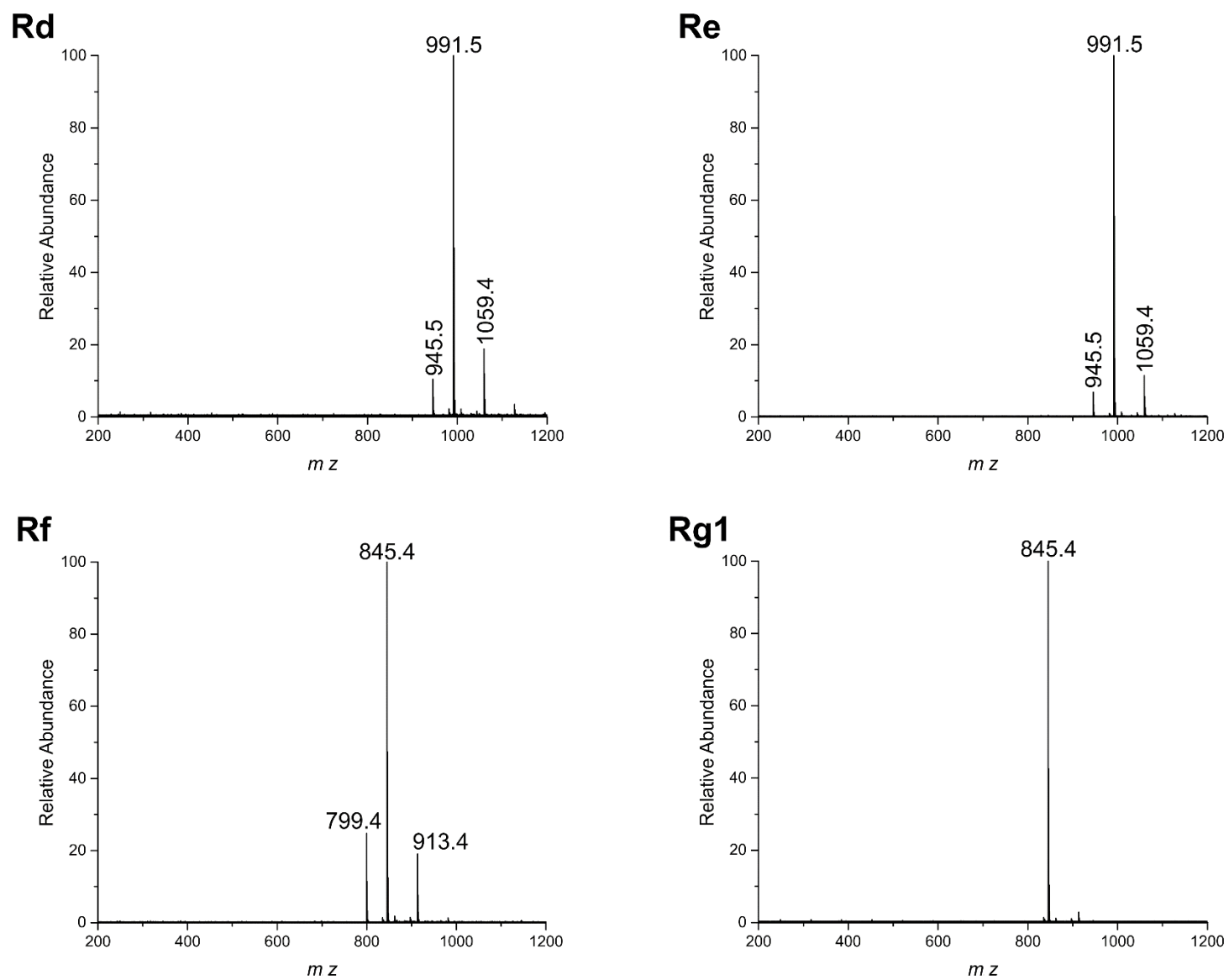


Fig. S5. Mass spectra of ginsenoside Rd (1079.29 g/mol), Re (947.17 g/mol), Rf (801.03 g/mol), and Rg1 (801.03 g/mol).

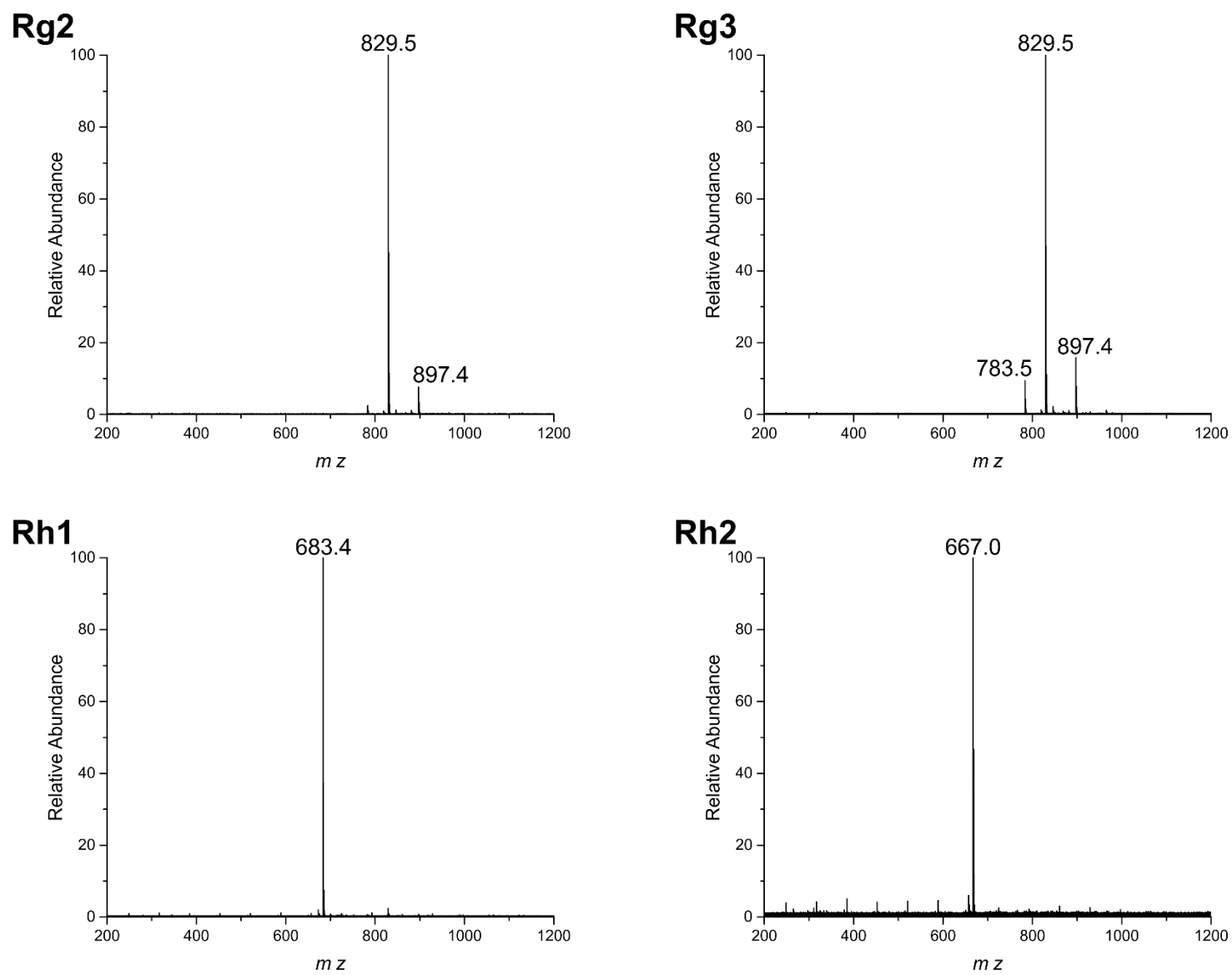


Fig. S6. Mass spectra of ginsenoside Rg2 (785.03 g/mol), Rg3 (785.03 g/mol), Rh1 (638.89 g/mol), and Rh2 (622.89 g/mol).

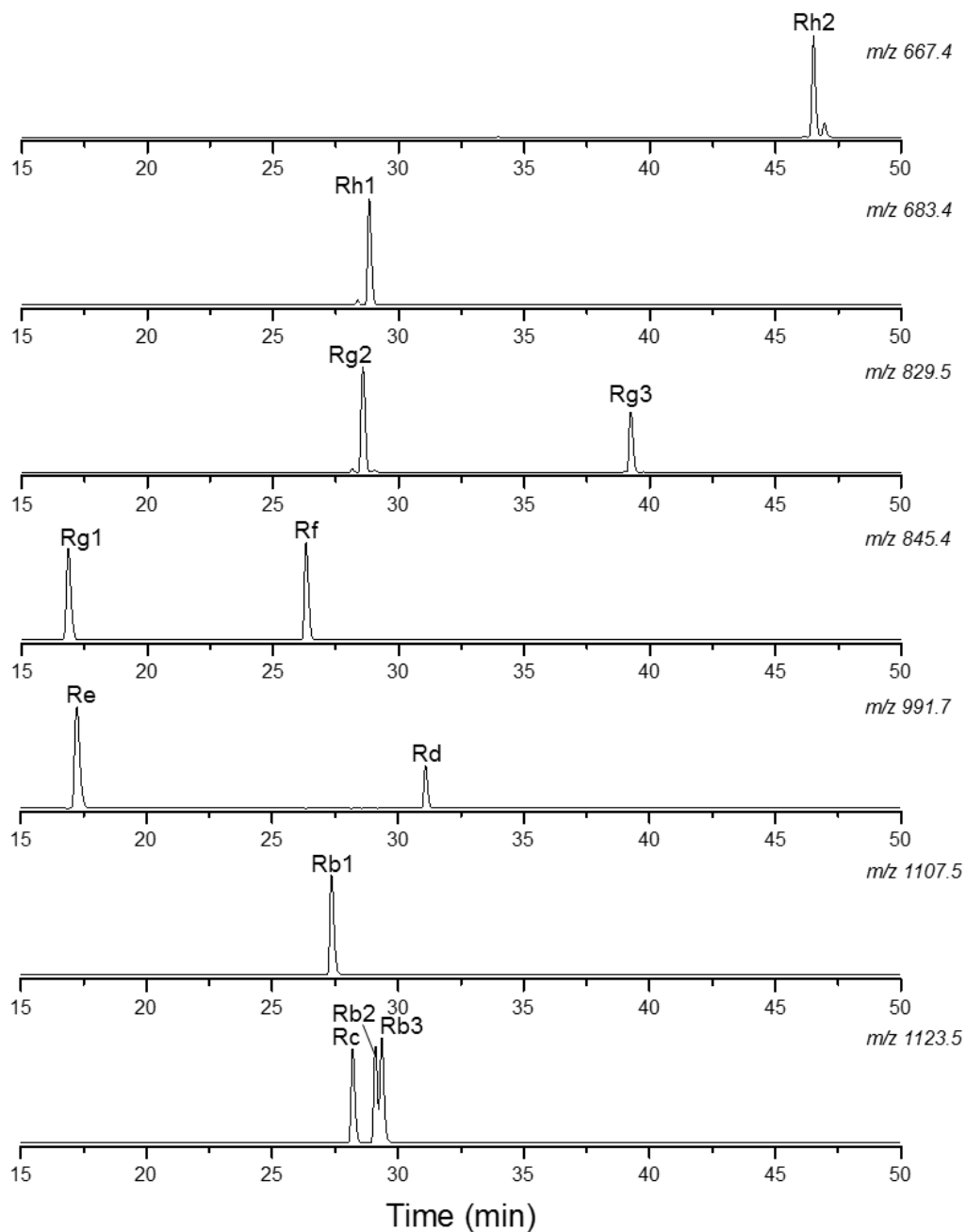


Figure S7. LC/MS chromatograms in SIM mode for the 12 ginsenoside mixture under the initial separation conditions. The separation conditions included a 0.7 mL/min flow rate, 25 °C column temperature, and the mobile phase gradient summarized in Table 1.

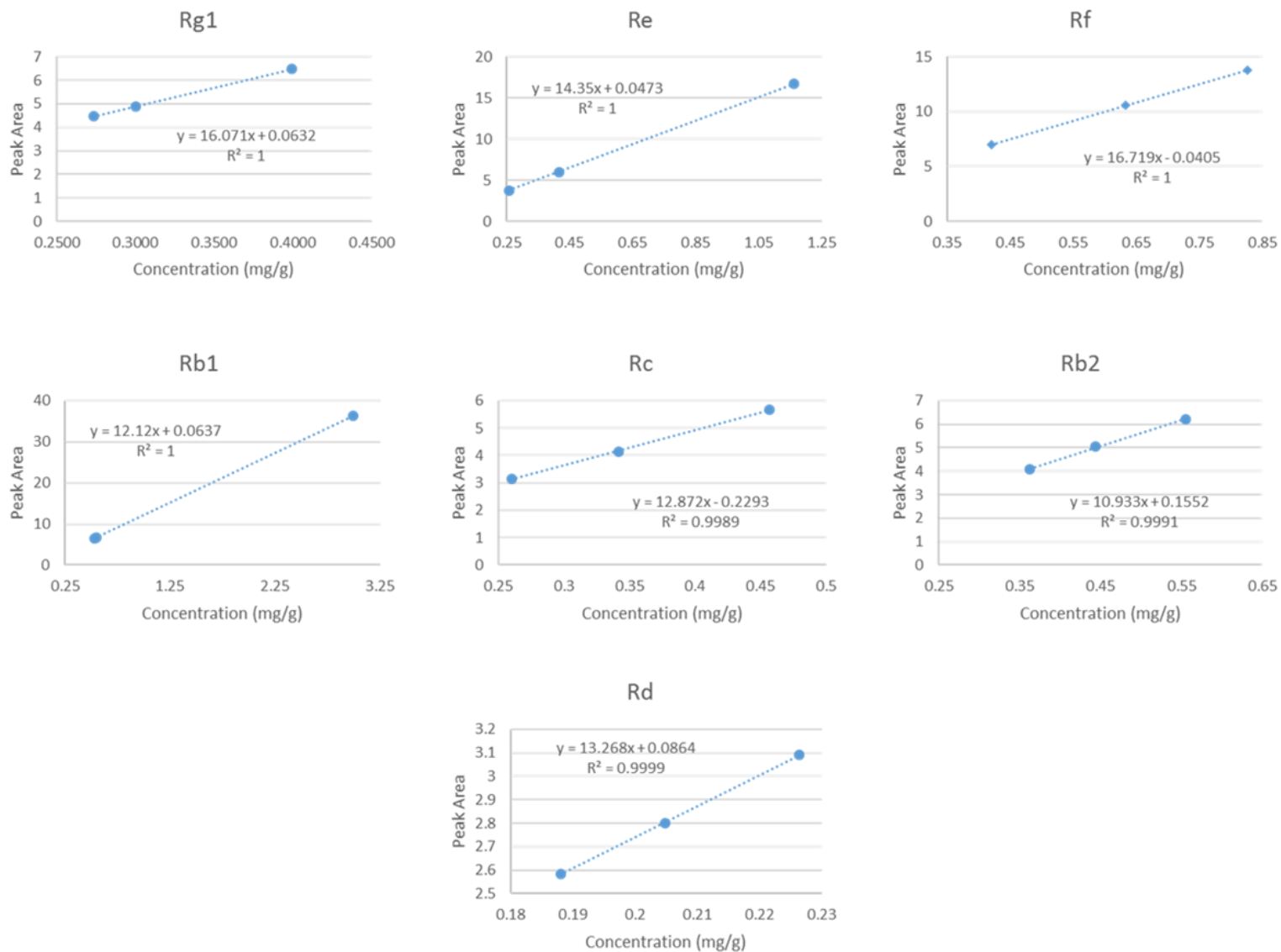


Figure S8. Calibration curves for the three calibrants used for the LC/UV measurements of SRM 3389.

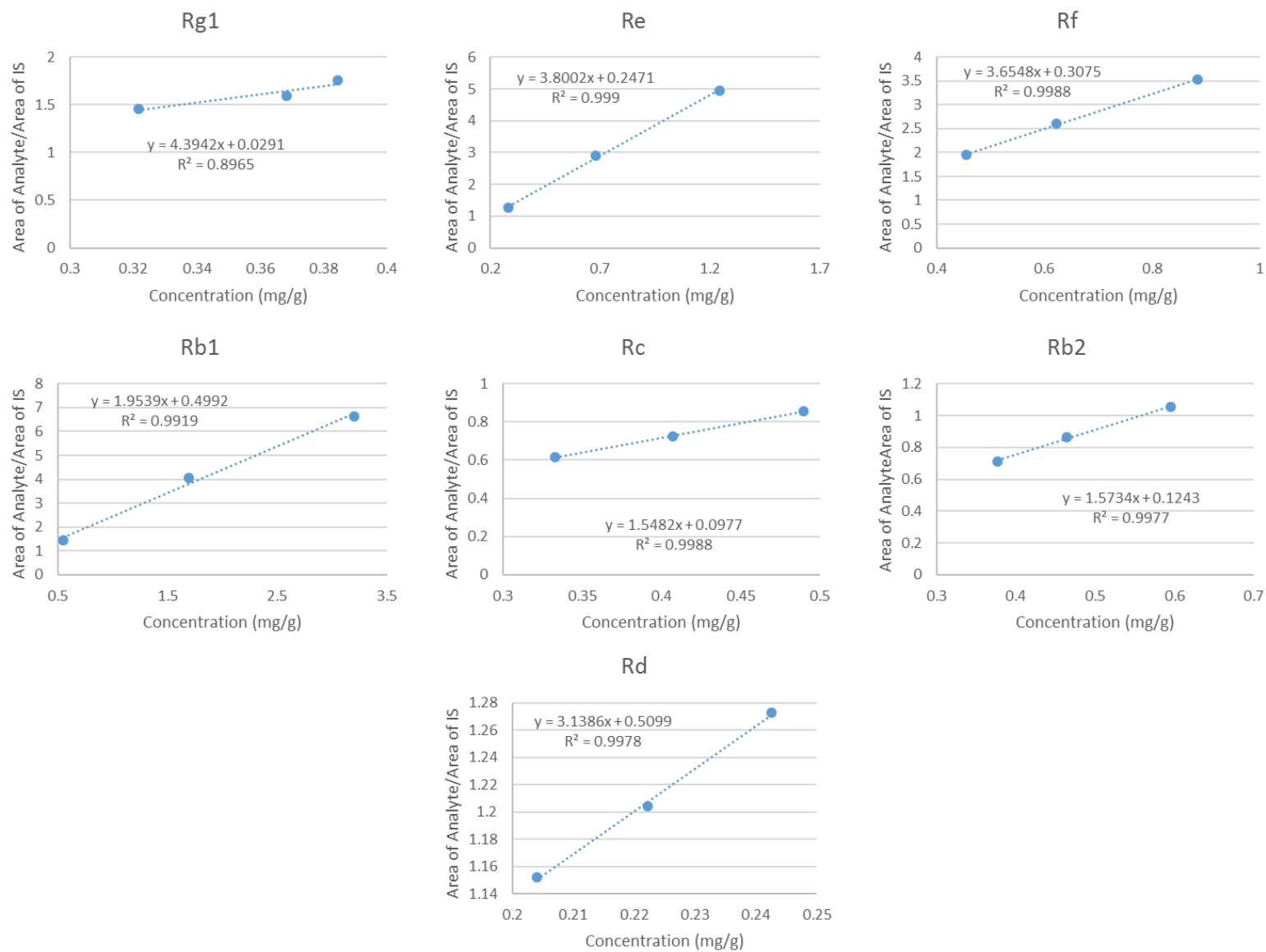


Figure S9. Calibration curves for the three calibrants used for the LC/MS measurements of SRM 3389.