

**Table. S1: UPLC-QTOF-MS/MS data of mixture standard ginsenosides in the positive ion mode**

No.	t <sub>R</sub>	[M+H] <sup>+</sup> / [M+Na] <sup>+</sup>	Δppm	Fragment ions in the positive mode	Molecular formular	Name
1	7.064	955.5224	-0.8	775.4610, 661.4295, 203.0536	C <sub>47</sub> H <sub>80</sub> O <sub>18</sub>	Notoginsenoside R <sub>1</sub>
2	7.567	823.4803	-1.4	643.4179, 463.3464, 203.0518	C <sub>42</sub> H <sub>72</sub> O <sub>14</sub>	Ginsenoside Rg <sub>1</sub>
3	7.495	969.5385	-0.8	789.4749, 661.4337	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Ginsenoside Re
4	10.442	1131.5923	-0.1	789.4760	C <sub>54</sub> H <sub>92</sub> O <sub>23</sub>	Ginsenoside Rb <sub>1</sub>
6	10.84	1101.5812	1.2	789.4725	C <sub>53</sub> H <sub>92</sub> O <sub>22</sub>	Ginsenoside RC
7	11.199	661.4294	0.4	481.3666	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	20(R/S)- Ginsenoside Rh <sub>1</sub>
8	11.295	1101.5819	0.3	789.4725, 587.4156	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>2</sub>
9	11.455	1101.5811	-	-	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>3</sub>
10	12.359	661.4282	-	-	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	Ginsenoside F <sub>1</sub>
11	12.412	969.5390	-1.4	789.4732, 645.4285, 203.0521	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	gypenoside XVII
12	13.357	947.5571	-0.3	767.4877, 605.4411, 443.3875	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Ginsenoside Rd
13	14.121	917.5463	-0.5	767.4958, 605.4409, 443.3896	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fe
14	14.665	917.5528	-1.0	767.4946, 605.4418	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Ginsenoside Rd <sub>2</sub>
15	14.899	939.5276	-	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fd
16	16.615	807.4855	-	-	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside F <sub>2</sub>
17	18.402	785.5380	-5.1	767.4930, 605.4430, 443.3891	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	GinsenosideRg <sub>3</sub>
18	20.32	953.7819	-6.1	477.3964	C <sub>30</sub> H <sub>52</sub> O <sub>4</sub>	PPT
19	23.857	645.4357	-1.2	465.3717, 203.0529	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	Ginsenoside CK
20	24.816	1245.8954	-4.9	1227.8881[2M+H-H <sub>2</sub> O] <sup>+</sup> , 1047.8254[2M+H-Glc-H <sub>2</sub> O] <sup>+</sup> ,	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	20(S)-Ginsenoside Rh <sub>2</sub>

				605.4415, 587.4305, 425.3778		
21	25.151	1245.8954	-6.0	1227.8900[2M+H-H <sub>2</sub> O] <sup>+</sup> , 605.4400, 587.4293, 425.3779	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	20(R)-Ginsenoside Rh <sub>2</sub>
22	30.318	483.4054	-7.4	-	C <sub>30</sub> H <sub>52</sub> O <sub>3</sub>	PPD

**Table. S2: UPLC-Q-TOF-MS/MS data of PNLs in the positive ion mode**

No.	t <sub>R</sub>	[M+H] <sup>+</sup> / [M+Na] <sup>+</sup>	Δppm	Fragment ions in the positive mode	Molecular formular	Name
P1	6.141	767.4583	-4.6	605.4056, 443.3519, 425.3427	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg5/ Rk1/ isomer
P2	8.271	1117.5744	4.1	897.5245, 805.4777, 765.4468, 443.3815	C <sub>53</sub> H <sub>90</sub> O <sub>23</sub>	Gypenoside LVI/ Gypenoside LXVII/ Yesaninoside H / isomer
P3	8.644	765.4784	-	747.4658, 585.4161, 423.3628	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg5/ Rk1/ isomer
P4	9.639	899.5424	-4.7	695.4280, 443.3783	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside SFt3/ isomer
P5	9.677	955.5204	0.6	335.0952	C <sub>47</sub> H <sub>80</sub> O <sub>18</sub>	ginsenoside R1/ iso- ginsenoside R1/ iso- Notoginsenoside R1
P6	9.849	1241.6640	-	1061.5952[2M+H-Glc-H <sub>2</sub> O] <sup>+</sup> , 619.2102, 457.1599	C <sub>36</sub> H <sub>60</sub> O <sub>8</sub>	iso-ginsenoside Rh4/ Rk3

P7	10.054	925.5101	1.5	467.1370,	C <sub>46</sub> H <sub>70</sub> O <sub>17</sub>	notoginsenoside Rw1 / chikusetsusaponin L5/isomer
P8	10.267	1233.5403	2.4	921.5151, 335.0996	C <sub>58</sub> H <sub>98</sub> O <sub>26</sub>	Ginsenoside Ra1/ ginsenoside Ra2/ notoginsenoside Fc/ notoginsenoside FP2
P9	10.342	1131.5942	1.5	789.4810, 365.1070	C <sub>54</sub> H <sub>92</sub> O <sub>23</sub>	Ginsenoside Rb1
P10	10.772	1101.5807	0.4	789.4755, 335.0942	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rc
P11	11.004	1187.5832	-	1143.5966, 875.4792 , 831.4842, 335.0970	-	Unknow
P12	11.23	1101.5814	1.3	789.4750, 335.0955	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb2
P13	11.344	1101.5796	1.1	789.4730, 335.0952	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb3
P14	12.421	969.5413	-1.6	879.4650, 789.4728	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	gypenoside XVII
P15	13.314	969.5419	1.2	365.1067	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Ginsenoside Rd
P16	14.112	939.5288	1.0	627.4052, 335.0939	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fe
P17	14.243	747.4244	-	703.4326, 643.4142, 463.3540, 203.0520	-	Unknow
P18	14.657	939.5302	1.5	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Ginsenoside Rd2
P19	14.825	939.5303	0.9	627.4195, 335.0949	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fd

**Table. S3: UPLC-QTOF-MS/MS data of metabolites of PNLs in the control group in the positive ion mode**

No.	t <sub>R</sub>	[M+H] <sup>+</sup> / [M+Na] <sup>+</sup>	Δppm	Fragment ions in the positive mode	Molecular formular	Name
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M1	6.975	962.5018	-	800.4554, 650.4074, 606.4133, 474.3683	-	Unknow
M2	7.09	911.4479	-	467.215	-	Unknow
M3	7.624	1107.5592	-3	945.5130, 783.4524, 765.4433, 203.1790	C <sub>54</sub> H <sub>90</sub> O <sub>23</sub>	Ginsenoside Rb <sub>1</sub>
M4	8.16	945.5079	-0.4	783.4711, 747.4412, 615.3872	C <sub>47</sub> H <sub>76</sub> O <sub>19</sub>	iso-Notoginsenoside Rw <sub>1</sub> +Ace-2H
M5	8.237	945.5054	-3.8	813.4685, 633.3984	C <sub>48</sub> H <sub>80</sub> O <sub>18</sub>	Unknow
M6	8.414	915.4941	-3.9	783.4708, 765.4349	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M7	8.568	975.5229	-	813.4573, 795.4314, 651.4019, 501.1392	-	Unknow
M8	8.851	765.4768	-3.2	747.4738, 585.2865, 423.3702	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg <sub>5</sub> / Rk <sub>1</sub> / isomer
M9	8.986	639.3243	-0.4	621.4359 441.3715, 423.3645	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	iso-Ginsenoside Rh <sub>1</sub>
M10	9.063	783.4717	-0.5	765.4808, 441.3695, 423.3585	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	iso-Ginsenoside Rg <sub>3</sub>
M11	9.139	959.5241	-0.6	813.4420, 797.4566, 475.3759	C <sub>48</sub> H <sub>82</sub> O <sub>19</sub>	Notoginsenoside R <sub>3</sub> / R <sub>6</sub> / N/ M/ 20-O- glucoginsenoside Rf/ isomer
M12	9.354	959.5058	-1.3	813.4701, 615.3672, 475.3793	C <sub>48</sub> H <sub>82</sub> O <sub>19</sub>	Notoginsenoside R <sub>3</sub> / R <sub>6</sub> / N/ M/ 20-O- glucoginsenoside Rf/ isomer

M13	10.106	956.5277	-	-		C <sub>47</sub> H <sub>80</sub> O <sub>18</sub>	ginsenoside R <sub>1</sub> / iso-ginsenoside R <sub>1</sub> / iso-Notoginsenoside R <sub>1</sub>
M14	10.32	957.5183	-3.6	811.4459, 649.3932		C <sub>47</sub> H <sub>82</sub> O <sub>18</sub>	ginsenoside R <sub>1</sub> +2H/ iso-ginsenoside R <sub>1</sub> +2H/ iso-Notoginsenoside R <sub>1</sub> +2H
M15	10.359	955.5244	1.5	643.4170, 335.0947		C <sub>47</sub> H <sub>80</sub> O <sub>18</sub>	ginsenoside R <sub>1</sub> / iso-ginsenoside R <sub>1</sub> / iso-Notoginsenoside R <sub>1</sub>
M16	10.492	975.515	-3.7	813.4659, 651.4055, 475.3733		C <sub>49</sub> H <sub>82</sub> O <sub>19</sub>	ginsenoside R <sub>1</sub> +Acety/ iso-ginsenoside R <sub>1</sub> +Acety/ iso-Notoginsenoside R <sub>1</sub> +Acety
M17	10.935	1233.6215	-1.9	-		C <sub>58</sub> H <sub>98</sub> O <sub>26</sub>	Ginsenoside Ra <sub>1</sub> / ginsenoside Ra <sub>2</sub> / notoginsenoside Fc/ notoginsenoside FP <sub>2</sub>
M18	10.955	899.5322	1.5	737.4799, 605.4400, 443.3850		C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside SFt <sub>3</sub> / isomer
M19	11	1101.5816	0	-		C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rc
M20	11.455	1101.5835	1.2	789.4794, 335.0955		C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>2</sub>
M21	11.512	823.4828	-0.6	643.4171, 203.0550		C <sub>42</sub> H <sub>72</sub> O <sub>14</sub>	iso-ginsenoside Rf/ iso-ginsenoside Rg <sub>1</sub>
M22	11.513	953.5079	-0.4	773.3179 641.3695, 335.0948, 203.0484		C <sub>47</sub> H <sub>78</sub> O <sub>18</sub>	ginsenoside R <sub>1</sub> -2H/ iso-ginsenoside R <sub>1</sub> -2H/ iso-

						Notoginsenoside R <sub>1</sub> -2H
M23	11.571	1101.5822	1.3	789.4741, 335.0920	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>3</sub>
M24	11.363	793.4281	-4.1	335.0946	C <sub>41</sub> H <sub>70</sub> O <sub>13</sub>	Notoginsenoside R <sub>2</sub> / ginsenoside F <sub>3</sub> / F <sub>5</sub> / La/ Pseudoginsenoside RT <sub>3</sub>
M25	12.596	969.5392	-0.6	789.4760, 645.4394, 203.0524	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	gypenoside XVII
M26	13.233	1071.5747	3.4	-	C <sub>52</sub> H <sub>88</sub> O <sub>21</sub>	Pro-Gypenoside XLIX
M27	13.313	1101.5794	0.7	789.4658, 335.1014	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>3</sub> / Notoginsenoside L/ isomer
M28	13.524	969.5378	0.5	627.4273, 365.1067, 305.0895	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Ginsenoside Rd
M29	13.62	1071.5681	0.5	759.4779, 467.1363, 335.0790	C <sub>52</sub> H <sub>88</sub> O <sub>21</sub>	Notoginsenoside O/ isomer
M30	13.658	899.5555	-1.2	767.5134, 737.4843, 605.4404, 443.3894	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Fe-H <sub>2</sub> O/ isomer
M31	13.792	1071.5704	0.5	759.4700, 663.2891, 467.1351, 335.0951	C <sub>52</sub> H <sub>88</sub> O <sub>21</sub>	Notoginsenoside O/ isomer
M32	13.907	1101.588	0.9	789.4834, 335.0855	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rb <sub>3</sub> / notoginsenoside L/ isomer
M33	14.156	943.5266	0.5	797.4698, 635.4161, 459.3835	C <sub>48</sub> H <sub>78</sub> O <sub>18</sub>	Unknow
M34	14.294	939.5279	-	335.0954	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fe
M35	14.482	939.5288	0.2	789.4769, 627.4297, 335.0943, 203.9494	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fe/ isomer
M36	14.824	939.5276	-0.5	355.0961	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Ginsenoside Rd <sub>2</sub>
M37	14.743	939.5288	0.5	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/

						Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M38	15.332	969.5368	0.1	789.4719, 527.1578, 423.3691	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Notoginsenoside K/ iso- Ginsenoside Re
M39	15.482	661.4283	-1.5	481.3651, 203.0510	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	Ginsenoside F <sub>1</sub> / Rh <sub>1</sub> / isomer
M40	15.56	767.4593	-	459.3847, 441.3730	-	Unknow
M41	15.713	939.5313	-0.9	759.4665, 531.2771, 335.0958	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M42	15.789	1011.552	0.8	831.4645, 789.4786, 407.1155	C <sub>50</sub> H <sub>84</sub> O <sub>19</sub>	Ginsenoside Rd+Acety/ Notoginsenoside K+Acety/ isomer
M43	15.902	939.5264	1.2	759.4655, 627.4204, 335.0947	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M44	16.377	939.53	0.9	759.4592, 627.4712, 335.0928	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M45	16.474	981.5398	-3.7	849.5601, 669.4326, 335.0941	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	Gypenoside IX+Acetyl/ Notoginsenoside Ft <sub>1</sub> +Acetyl/

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M46	16.548	661.4289	0	481.3655, 203.0505	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl Ginsenoside F <sub>1</sub> / Rh1/ isomer
M47	16.741	807.4878	-1.6	627.4242, 203.0524	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	20-S-Ginsenoside F <sub>2</sub>
M48	17.041	1069.557	2.4	923.4999, 761.4465, 617.4016, 441.3727, 423.3624	C <sub>52</sub> H <sub>86</sub> O <sub>21</sub>	Gypenoside XLIX/ isomer
M49	17.348	939.5312	-2.7	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M50	17.646	981.538	-3.6	627.4171, 335.0786	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	Gypenoside IX+Acetyl/ Notoginsenoside Ft <sub>1</sub> +Acetyl/ Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl
M51	18.404	923.4971	3	761.4445, 599.3925, 441.3696	C <sub>46</sub> H <sub>76</sub> O <sub>17</sub>	Unknow
M52	18.517	807.4871	-0.6	749.4711, 425.3788	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>3</sub> / isomer
M53	18.592	807.4863	-0.6	365.1065	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>3</sub> / isomer
M54	18.667	939.5294	-0.1	807.4957, 335.0880	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M55	18.876	849.498	-0.9	669.4331, 203.0531	C <sub>44</sub> H <sub>74</sub> O <sub>14</sub>	Acetyl -ginsenoside Rg <sub>3</sub>
M56	19.046	981.5407	-3.6	849.4843, 335.0961	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	Gypenoside IX+Acetyl/ Notoginsenoside

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						Ft <sub>1</sub> +Acetyl/ Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl
M57	19.742	793.4863	-2.1	407.3694, 207.0654	C <sub>41</sub> H <sub>70</sub> O <sub>13</sub>	Ginsenoside F <sub>3</sub> / F <sub>5</sub> / Notoginsenoside R <sub>2</sub>
M58	19.838	981.5374	-3.8	-	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	Gypenoside IX+Acetyl/ Notoginsenoside Ft <sub>1</sub> +Acetyl/ Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl
M59	19.952	777.4738	-1.9	465.3677, 335.0943	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M60	20.008	777.4742	-1.4	465.3679, 335.0943	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M61	20.121	777.4745	-1.1	335.0952	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M62	20.271	985.5284	1.5	805.4793, 365.3230	C <sub>48</sub> H <sub>82</sub> O <sub>19</sub>	Notoginsenoside R <sub>3</sub> / R <sub>6</sub> / N/ 20-O- glucoginsenoside Rf/ isomer
M63	20.517	777.4717	-1.5	335.0943	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M64	20.654	777.4742	-0.8	335.0945	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M65	20.69	793.4548	-2.7	481.3651	C <sub>41</sub> H <sub>70</sub> O <sub>13</sub>	Ginsenoside F <sub>3</sub> / F <sub>5</sub> / Notoginsenoside R <sub>2</sub>

M66	20.691	849.4971	-0.3	627.4231, 501.2896, 245.0616	C <sub>44</sub> H <sub>74</sub> O <sub>14</sub>	Ginsenoside Rs <sub>3</sub> / isomer
M67	21.099	807.5714	-	415.2801	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	iso-Ginsenoside Rg <sub>3</sub>
M68	21.158	921.5155	-1	497.1473	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Ft <sub>1</sub> - H <sub>2</sub> O/ isomer
M69	21.629	921.5173	-1.4	789.4819, 497.1481	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Ft <sub>1</sub> - H <sub>2</sub> O/ isomer
M70	21.838	823.3158	-2.6	691.4453, 529.3869, 203.1778	C <sub>42</sub> H <sub>72</sub> O <sub>14</sub>	Ginsenoside Rf/ iso- ginsenoside Rf/ iso- ginsenoside Rg <sub>1</sub> / Gypenoside LI
M71	22.104	643.418	-1.3	463.3591, 203.0525	C <sub>36</sub> H <sub>60</sub> O <sub>8</sub>	iso-ginsenoside Rh <sub>4</sub> / Rk <sub>3</sub>
M72	22.501	777.4768	-3.5	335.0946	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M73	23.11	789.4766	-6.4	627.4311, 407.3535	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg <sub>5</sub> / Rk <sub>1</sub> / isomer
M74	23.259	499.3745	-5.6	-	C <sub>30</sub> H <sub>52</sub> O <sub>4</sub>	PPT
M75	23.293	891.5023	-0.2	669.4387, 335.0909, 245.0565	C <sub>46</sub> H <sub>76</sub> O <sub>15</sub>	Koryoginsenoside R <sub>1</sub> / isomer
M76	23.654	819.4869	-0.5	465.3793, 377.1045	C <sub>43</sub> H <sub>74</sub> O <sub>13</sub>	Ginsenoside MC+Acetyl/ Ginsenoside compound Y+Acetyl/ isomer
M77	23.767	777.4726	0.1	535.5118, 335.0906	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M78	23.768	789.4738	-0.4	669.4303, 203.0483	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg <sub>5</sub> / Rk <sub>1</sub> / isomer
M79	23.936	645.4334	-1.2	465.3715, 203.0528	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	Ginsenoside CK

M80	24.107	1245.893	-	623.4519, 443.3885	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	Ginsenoside CK
M81	25.047	645.4323	-1.5	465.3679, 203.0525	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	20-S-Ginsenoside Rh <sub>2</sub>
M82	25.392	645.4335	-0.9	465.3710, 203.0494	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	20-R-Ginsenoside Rh <sub>2</sub>
M83	25.788	849.496	1.2	365.1064	C <sub>44</sub> H <sub>74</sub> O <sub>14</sub>	Ginsenoside Rs <sub>3</sub> / isomer
M84	26.22	643.4177	-0.1	463.3545, 203.0518	C <sub>36</sub> H <sub>60</sub> O <sub>8</sub>	iso-ginsenoside Rh <sub>4</sub> / Rk <sub>3</sub>
M85	26.507	831.4862	0.5	407.1198	C <sub>44</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>5</sub> +Acetyl/ Rk <sub>1</sub> +Acetyl/ isomer
M86	26.667	831.4857	-0.5	407.1195	C <sub>44</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>5</sub> +Acetyl/ Rk <sub>1</sub> +Acetyl/ isomer
M87	27.124	831.4875	-0.6	515.3244, 407.1176	C <sub>44</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>5</sub> +Acetyl/ Rk <sub>1</sub> +Acetyl/ isomer
M88	27.656	687.442	-0.4	465.3711, 245.0620	C <sub>38</sub> H <sub>64</sub> O <sub>9</sub>	Ginsenoside CK/ Rh <sub>2</sub> +Acetyl
M89	27.675	819.4868	-	465.3609, 335.0940	-	Unknow
M90	27.941	819.4858	-	507.3809, 335.0946	-	Unknow
M91	28.059	629.4414	0.8	425.3763, 407.3697, 203.1782	C <sub>36</sub> H <sub>62</sub> O <sub>7</sub>	Ginsenoside CK-O/ Ginsenoside Rh <sub>2</sub> -O
M92	28.509	687.4439	-1.8	465.3676, 245.0630	C <sub>38</sub> H <sub>64</sub> O <sub>9</sub>	Ginsenoside CK/ Rh <sub>2</sub> +Acetyl
M93	28.845	627.4245	-	459.2752	C <sub>36</sub> H <sub>60</sub> O <sub>7</sub>	Ginsenoside Rk <sub>2</sub> / ginsenoside Rh <sub>3</sub> / Iso- ginsenoside Rh <sub>3</sub>
M94	30.106	687.4419	-2.3	507.3782, 203.0517	C <sub>38</sub> H <sub>64</sub> O <sub>9</sub>	Ginsenoside CK/ Rh <sub>2</sub> +Acetyl

**Table. S4: UPLC-QTOF-MS/MS data of metabolites of PNLs in the pseudo GF model group in the positive ion mode**

No.	t <sub>R</sub>	[M+H] <sup>+</sup> / [M+Na] <sup>+</sup>	Δpp m	Fragment ions in the positive mode	Molecular formular	Name
M4	8.119	945.5081	-	783.4267, 747.4202, 203.1807	C <sub>47</sub> H <sub>76</sub> O <sub>19</sub>	iso-Notoginsenoside Rw <sub>1</sub> +Ace-2H
M23	11.433	1101.5833	1.5	789.4864, 335.0956	C <sub>53</sub> H <sub>90</sub> O <sub>22</sub>	Ginsenoside Rc/ Ginsenoside Rb <sub>2</sub> / Ginsenoside Rb <sub>3</sub> / Notoginsenoside L/ isomer
M95	12.301	661.4312	1.5	481.4312, 203.0531	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	Ginsenoside F <sub>1</sub> / Rh <sub>1</sub> / isomer
M25	13.301	969.5477	7.4	-	C <sub>48</sub> H <sub>82</sub> O <sub>18</sub>	Ginsenoside Rd/ gypenoside XVII
M33	13.962	943.5271	2.1	797.4708, 599.3943, 441.3748, 203.1796	C <sub>48</sub> H <sub>78</sub> O <sub>18</sub>	Unknow
M34	14.123	939.5303	2.3	335.0935, 203.0519	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Notoginsenoside Fe
M96	14.619	899.5356	1.9	767.5153, 605.4487, 407.3701, 203.1802	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Fe-H <sub>2</sub> O/ isomer
M36	14.638	939.5342	2.3	747.3299, 335.0983	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Ginsenoside Rd <sub>2</sub>
M42	15.674	981.5429	4.1	785.5945, 668.4183, 243.2079	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	Gypenoside IX+Acetyl/ Notoginsenoside Ft <sub>1</sub> +Acetyl/ Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl
M39	15.669	661.4274	3.7	481.4274, 203.0572	C <sub>36</sub> H <sub>62</sub> O <sub>9</sub>	Ginsenoside F <sub>1</sub> / Rh <sub>1</sub> /

M45	16.382	981.5404	4.2	669.4241, 335.0924	C <sub>48</sub> H <sub>78</sub> O <sub>19</sub>	isomer Gypenoside IX+Acetyl/ Notoginsenoside Ft <sub>1</sub> +Acetyl/ Vinaginsenoside R <sub>16</sub> +Acetyl/ R <sub>17</sub> +Acetyl
M47	16.59	807.4873	0.5	627.4243, 203.0497	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	20-S-Ginsenoside F <sub>2</sub>
M48	16.759	1069.5732	5	923.5147, 567.4073, 423.3663	C <sub>52</sub> H <sub>86</sub> O <sub>21</sub>	Gypenoside XLIX/ isomer
M49	16.795	939.5312	3	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M50	17.043	939.5315	1.5	497.1465	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M52	18.36	807.4871	-0.7	365.1082	C <sub>42</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>3</sub> / isomer
M55	18.623	849.4987	3.4	669.4334, 203.0507	C <sub>44</sub> H <sub>74</sub> O <sub>14</sub>	Acetyl -ginsenoside Rg <sub>3</sub>
M54	18.736	939.5314	0.6	-	C <sub>47</sub> H <sub>80</sub> O <sub>17</sub>	Gypenoside IX/ Notoginsenoside Ft <sub>1</sub> / Vinaginsenoside R <sub>16</sub> / R <sub>17</sub> / isomer
M59	19.782	777.4772	7.6	335.0963, 203.0506	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M60	19.819	777.477	-1.8	335.0969, 203.0526	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/

M61	20.271	777.4773	0.6	335.0958	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside compound Y Ginsenoside MC/ Ginsenoside compound Y
M63	20.478	777.4737	-1.4	335.0952	C <sub>41</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside MC/ Ginsenoside compound Y
M68	20.909	921.5199	4.1	-	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Ft <sub>1</sub> - H <sub>2</sub> O/ isomer
M69	21.397	921.5214	1	789.4911, 497.1334	C <sub>47</sub> H <sub>78</sub> O <sub>16</sub>	Notoginsenoside Ft <sub>1</sub> - H <sub>2</sub> O/ isomer
M73	22.953	789.4798	4.5	365.11	C <sub>42</sub> H <sub>70</sub> O <sub>12</sub>	Ginsenoside Rg <sub>5</sub> / Rk <sub>1</sub> / isomer
M74	23.214	499.3738	-	-	C <sub>30</sub> H <sub>52</sub> O <sub>4</sub>	PPT
M76	23.366	819.4848	2.7	503.3473, 377.1032	C <sub>43</sub> H <sub>74</sub> O <sub>13</sub>	Ginsenoside MC+Acetyl/ Ginsenoside compound Y+Acetyl/ isomer
M81	23.795	645.4328	1.4	465.3702, 203.0530	C <sub>36</sub> H <sub>62</sub> O <sub>8</sub>	20-S-Ginsenoside Rh <sub>2</sub>
M87	27.136	831.5481	-2.1	-	C <sub>44</sub> H <sub>72</sub> O <sub>13</sub>	Ginsenoside Rg <sub>5</sub> +Acetyl/ Rk <sub>1</sub> +Acetyl/ isomer
M89	27.775	819.4916	5.4	335.097	C <sub>43</sub> H <sub>74</sub> O <sub>13</sub>	Ginsenoside MC+Acetyl/ Ginsenoside compound Y+Acetyl/ isomer
M92	28.439	687.4433	0.5	465.3702, 245.0625	C <sub>38</sub> H <sub>64</sub> O <sub>9</sub>	Ginsenoside CK/ Rh <sub>2</sub> +Acetyl
M93	28.738	627.4167	4.3	-	C <sub>36</sub> H <sub>60</sub> O <sub>7</sub>	Ginsenoside Rk <sub>2</sub> / ginsenoside Rh <sub>3</sub> / Iso- ginsenoside Rh <sub>3</sub>

M97 29.26 629.505 -5.6 -

$C_{36}H_{62}O_7$  Ginsenoside CK-O/  
Ginsenoside Rh<sub>2</sub>-O

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