Supplementary Information

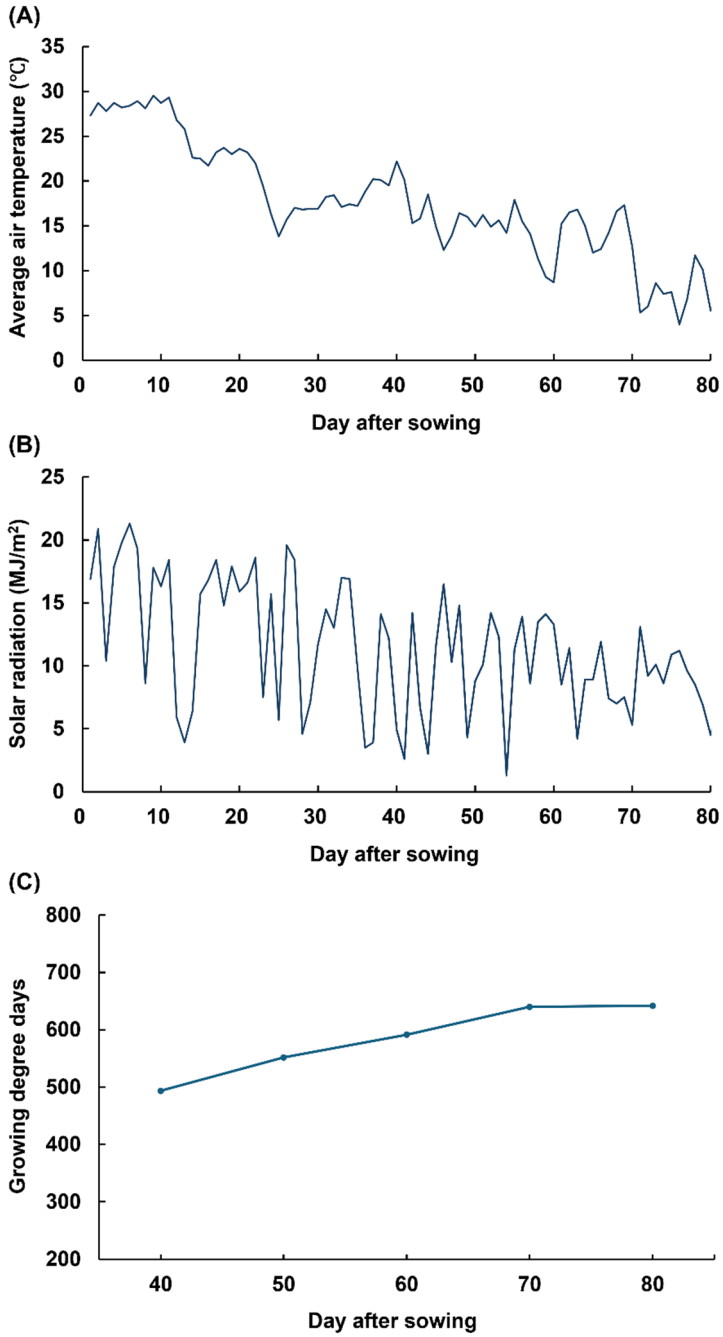


Fig. S1. Average air temperature (A), solar radiation (B), and accumulated growing degree days (C) after sowing in September 2024. Growing degree days were calculated using a base temperature of 10℃.

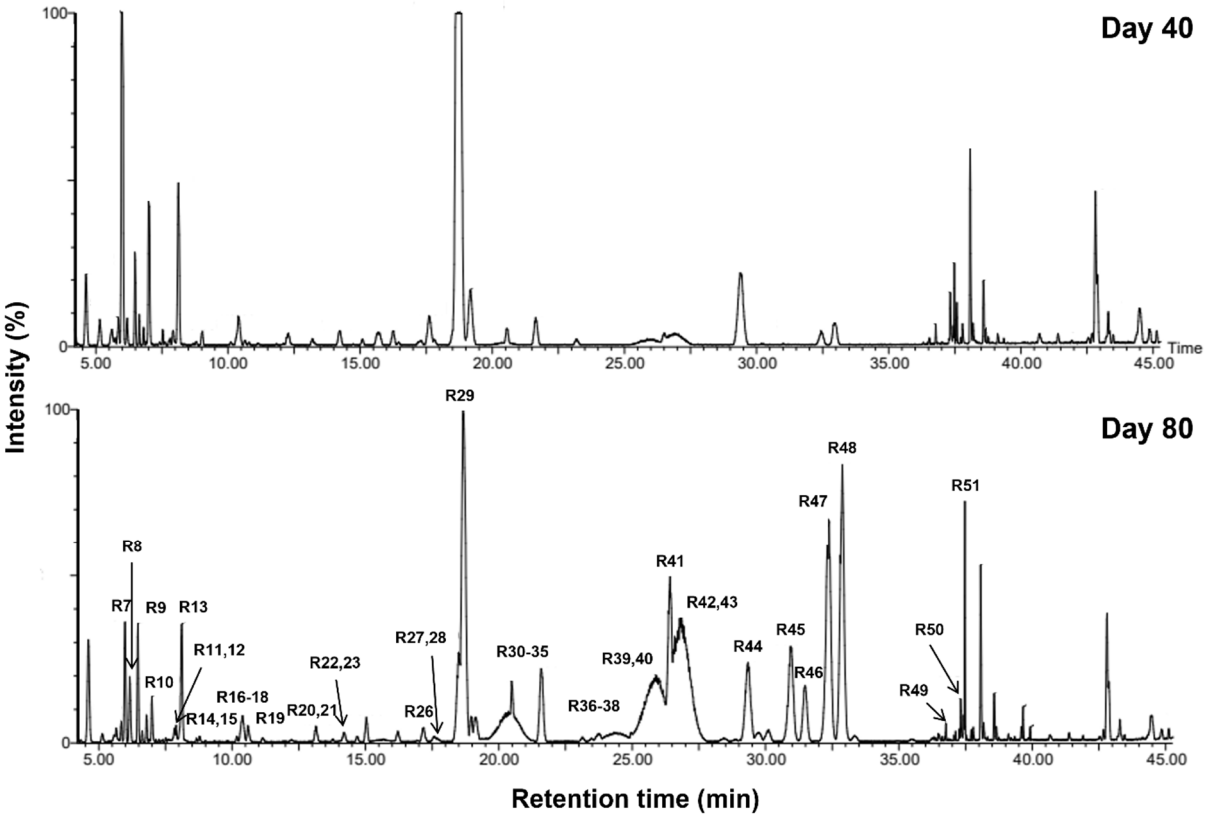
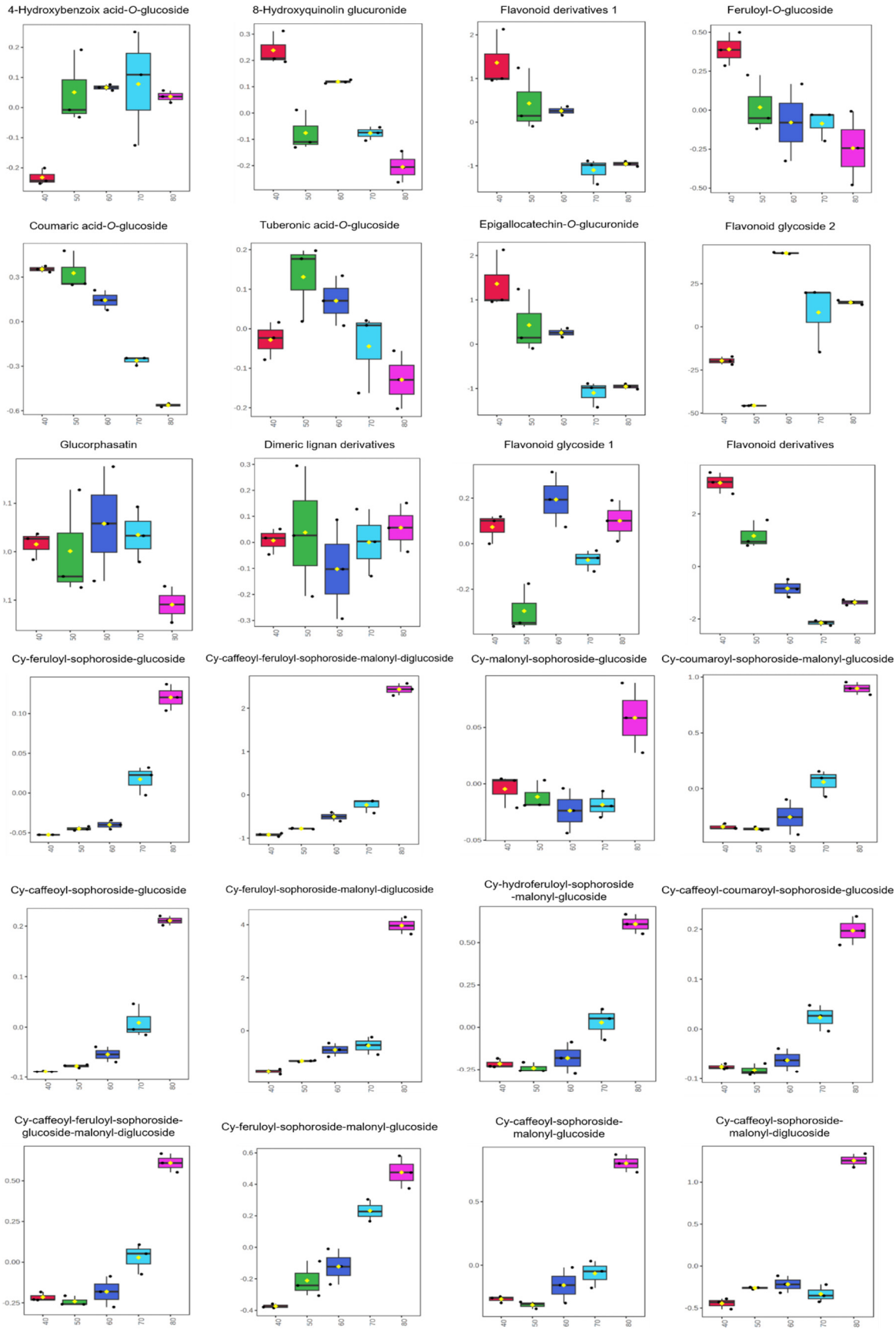


Fig. S2. UPLC-QToF-MS chromatograms of purple radish roots collected at the beginning (Day 40) and end (Day 80) of the cultivation period. The MS results are presented in Table 3. UPLC-QToF-MS, ultra-performance liquid chromatography quadrupole time-of-flight mass spectrometry; MS, mass spectrometry.


4-Hydroxybenzoix acid-O-glucoside
8-Hydroxyquinolin glucuronide
Flavonoid derivatives 1
Feruloyl-O-glucoside
Coumaric acid-O-glucoside
Tuberonic acid-O-glucoside
Epigallocatechin-O-glucuronide
Flavonoid glycoside 2
Glucorphasatin
Dimeric lignan derivatives
Flavonoid glycoside 1
Flavonoid derivatives
Cy-feruloyl-sophoroside-glucoside
Cy-caffeoyl-feruloyl-sophoroside-malonyl-diglucoside
Cy-malonyl-sophoroside-glucoside
Cy-coumaroyl-sophoroside-malonyl-glucoside
Cy-caffeoyl-sophoroside-glucoside
Cy-feruloyl-sophoroside-malonyl-diglucoside
Cy-hydroferuloyl-sophoroside
-malonyl-glucoside
Cy-caffeoyl-coumaroyl-sophoroside-glucoside
Cy-caffeoyl-feruloyl-sophoroside-
glucoside-malonyl-diglucoside
Cy-feruloyl-sophoroside-malonyl-glucoside
Cy-caffeoyl-sophoroside-
malonyl-glucoside
Cy-caffeoyl-sophoroside-
malonyl-diglucoside

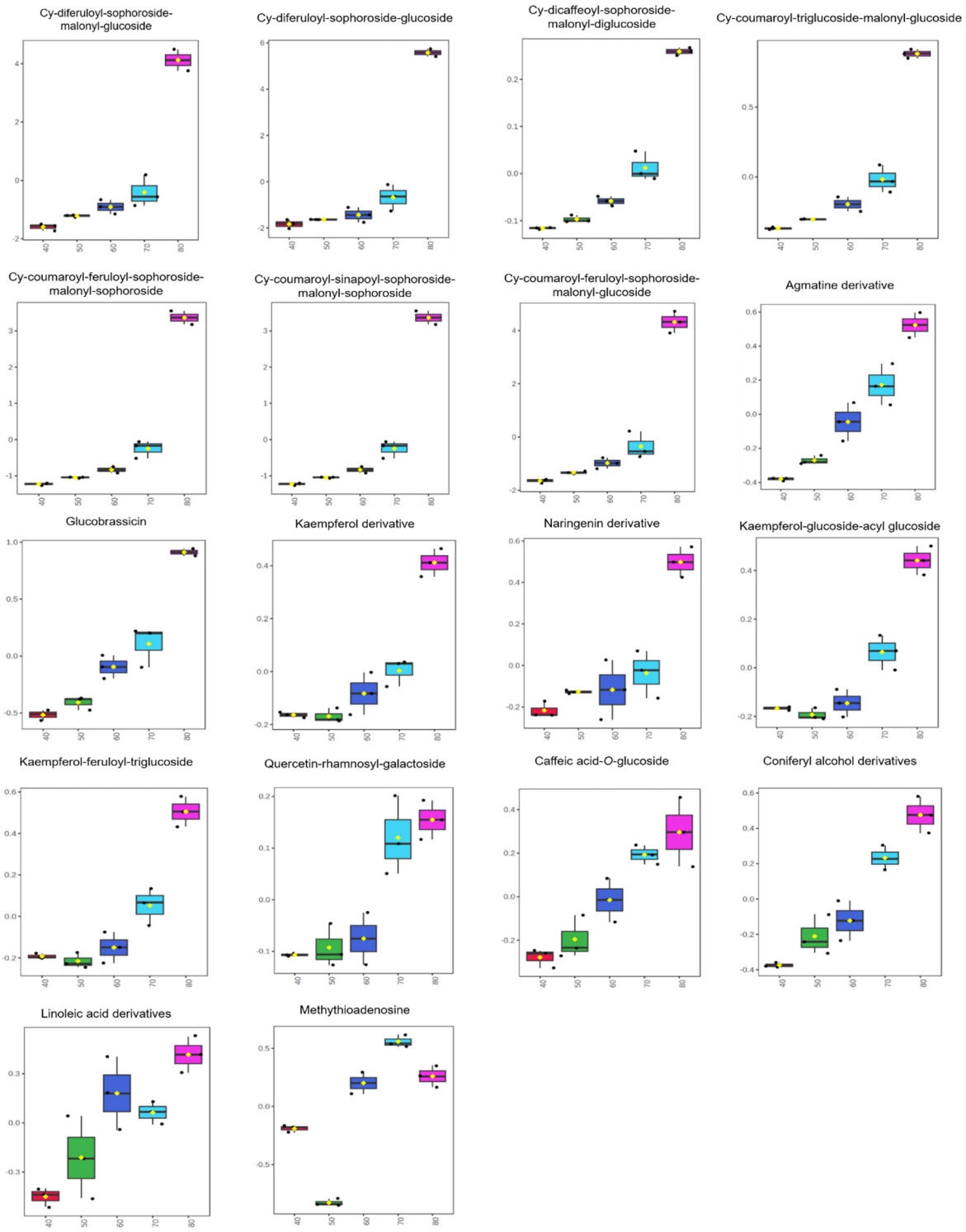


Fig. S3. Metabolites involved in amino acid, flavonoid, phenolic acid, and cyanidin glycoside in purple radish root during the cultivated period. All values are mean ± SD (n = 3).

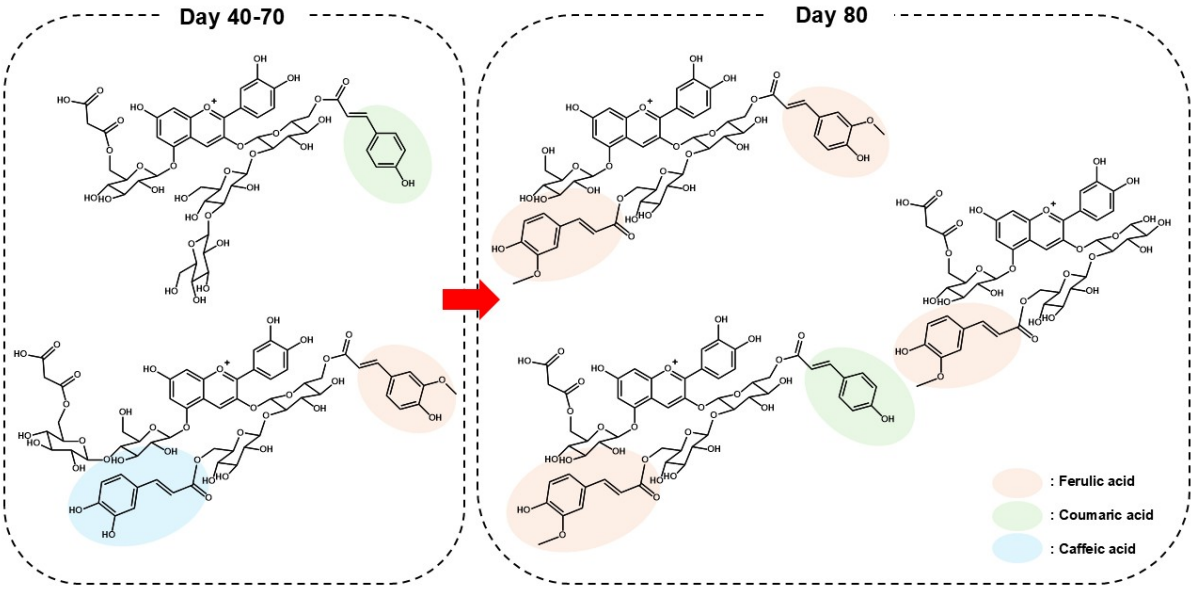


Fig. S4. Changes in the cyanidin glycosides in purple radish roots between days 40–70 (left) and day 80 (right) of the cultivation period. Cyanidin glycosides were conjugated with caffeic acid (blue background), coumaric acid (green background), and ferulic acid (red background).

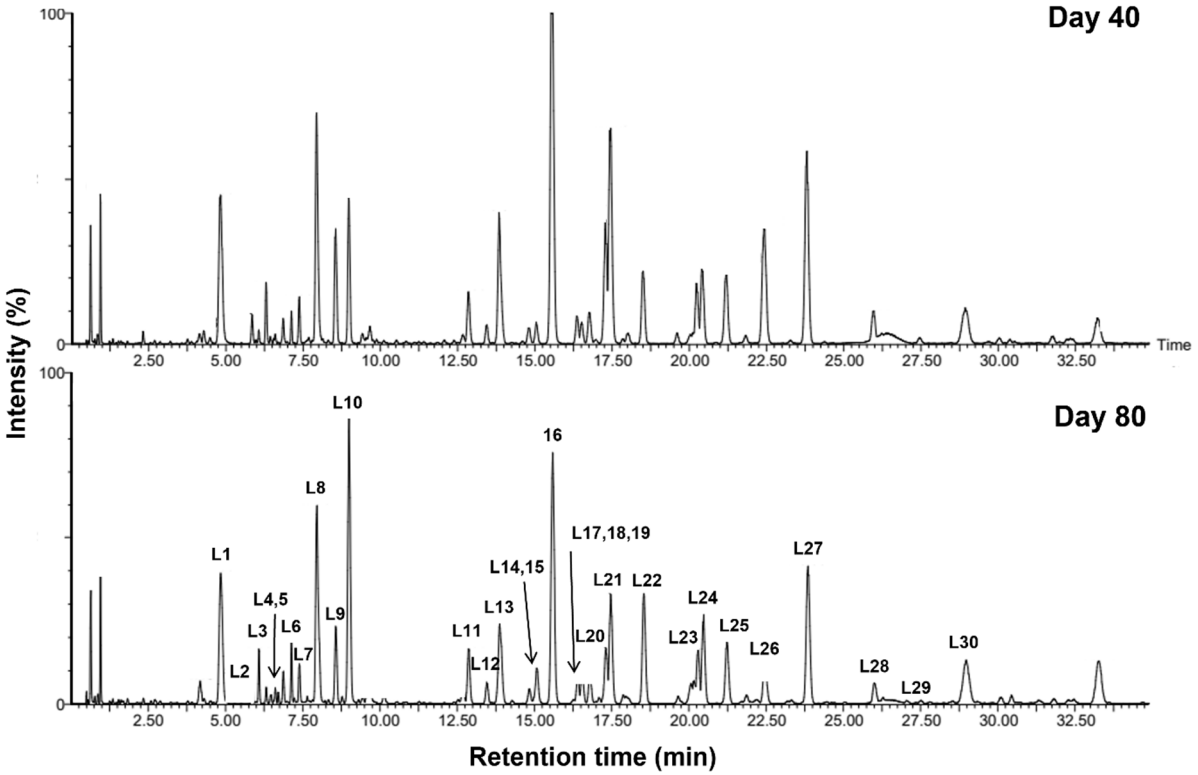


Fig. S5. UPLC-QToF-MS chromatograms of purple radish leaves collected at the beginning (Day 40) and end (Day 80) of the cultivation period. The MS results are presented in Table 4. UPLC-QToF-MS, ultra-performance liquid chromatography quadrupole time-of-flight mass spectrometry; MS, mass spectrometry.

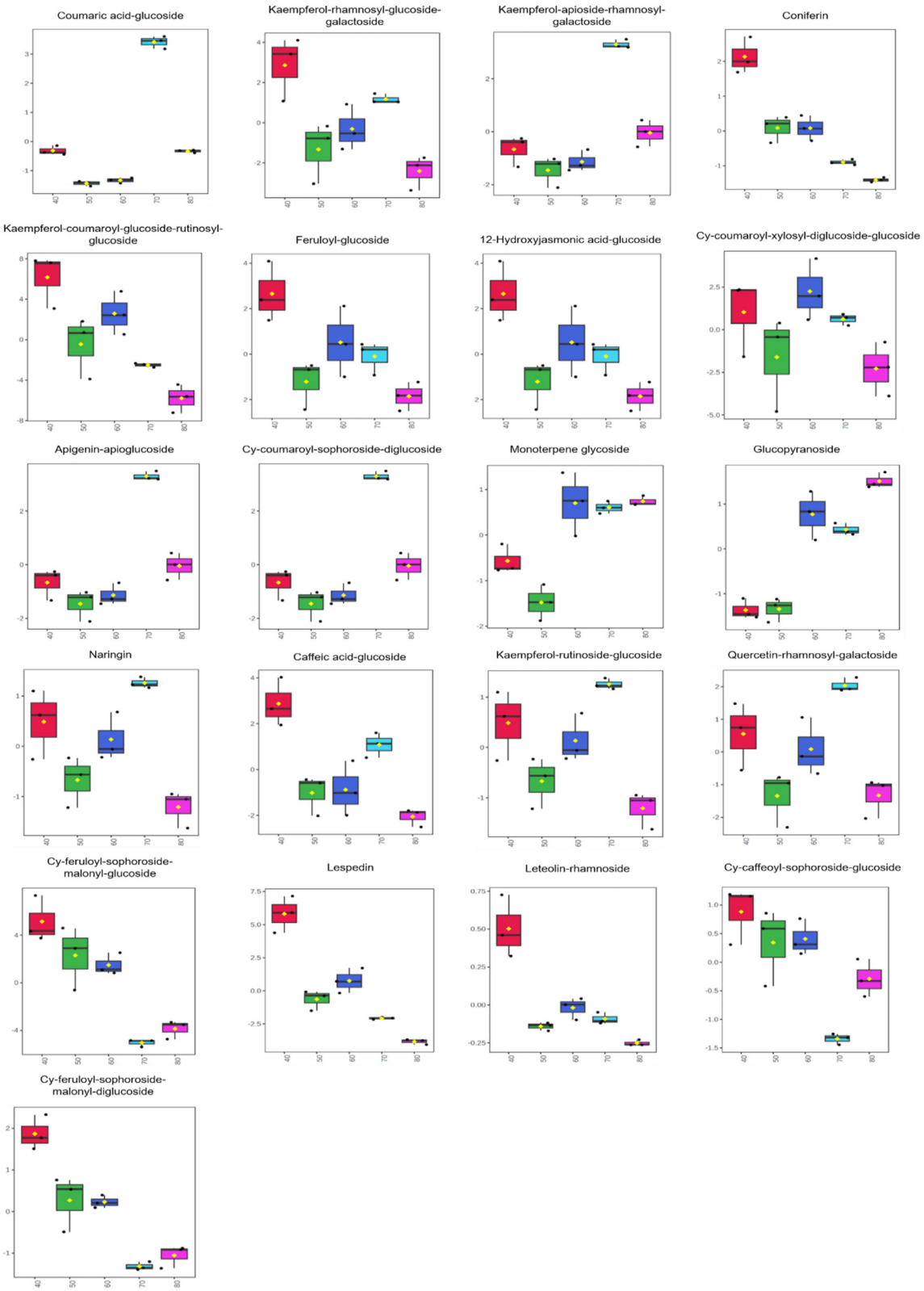


Fig. S6. Metabolites involved in amino acid, flavonoid, phenolic acid, and cyanidin glycoside in purple radish leaf during the cultivated period. All values are mean ± SD (n = 3).