Supplementary Table 1 Advantages and disadvantage of different extraction methods for flavonoids

Method	Advantage	Disadvantage
Organic Solvent extraction	Simple operation; low cost.	Time- and cost-consuming; environment unfriendly; low yield.
Microwave-assisted extraction	Uniform heating process; high extraction efficiency; easy operation.	High extraction temperature; instability of the active ingredients; low yield.
Ultrasound Assisted Extraction	High extraction efficiency; low extraction temperature; safety processing.	Limited effective ultrasonic area; unsuitable for industrialized large-scale production; low yield.
Enzymatic extraction	Mild conditions, normal temperature and pressure; fast catalytic speed.	Enzymes are fragile and easily inactivated; low yield.
Semi-bionic extraction method	Simple equipment; convenient operation; high extraction efficiency; no organic solvent residue.	High extraction temperature; instability of the active ingredients; low yield.
Steam explosion	No need to use harmful chemicals and solvents to avoid secondary pollution.	Easy to cause structural damage of flavonoids; low yield.
Supercritical CO_2 Extraction	Easy temperature control; high safety; no organic solvent residue; long maintenance of the biological activity of the product.	High requirements of the equipment; large consumption of the energy; unsuitable for large-scale industrial production; low yield.
Subcritical Fluid Extraction	Non-toxic, environmentally friendly; low-energy; suitable for a large-scale industrialized production.	High-cost of the device; limited application to a certain subcritical fluid; low yield.
Ionic liquid extraction	Good stability, strong dissolving ability, structure can be designed	Difficulty in purification; low yield.
Deep eutectic solvents coupled with Pulsed electric field (PEF-DES)	Green solvent; high extraction efficiency; less time-consuming; good stability; suitable for industrialized production.	/