

Table S1. Extraction efficiency of acid-based and sugar-based NADES

Sample*	Molar Ratio (ChCl:HBD)	Total phenolic content (mg GAE/g)
ChCl:LA NADES	1:2	160.88 ± 14.27
ChCl:MA NADES	1:2	62.83 ± 9.15
ChCl:CA NADES	1:2	55.16 ± 8.34
ChCl:GL NADES	1:2	49.11 ± 6.11
ChCl:SU NADES	1:2	41.96 ± 7.74

LA: Lactic acid, MA: Malic acid, CA: Citric acid, GL: Glucose, SU: Sucrose

Table S2. Analyzed polyphenols

Analyte	m/z
Syringic Acid	198.9
Gallic Acid	168.9
Quercetin	301
P Coumarci Acid	162.9
Oleochantal	303.2
Hydroxytyrosol	153.05
Trans Ferulic Acid	193
Oleuropein	539
Hesperetin	301.3
Trimethoxyflavone	312
Arbutin	271.2
Rosmarinic Acid	359
Ursolic Acid	455
Apigenin	269
Amentoflavone	537.1
Luteoilin	284.9
Quercetin-3-O-Glucoside	463.1
Quercetin-3-O- Glucuronic Acid	477
Kaempferol-3-O-Glucose	609.1
Quercetin-3-O.Hexose Deoxyhexose	609.1
Isorhamnetin- 3-O Rutinoside	623.1
Isorhamnetin-7-O- Pentose	447.1
Luteoilin 7-O-Glucoside	447.1
Kaempferol-3-O-Glucuronic Acid	461.1
Kaempferol-3-O-Pentose	417.1
Kaempferol-3-O-Hexose Deohyhexose	593.1
Tyrosol	153.4
Protocatechoic Acid	153
Vanillic Acid	167
Syringic Acid	197
P-Hydroxybenzoic\Salicilic Acid	137
Gentisic Acid	153
Caffeic Acid	179
Sinapic Acid	223
Ferulic Acid	193
Trans-Cinnamic Acid	147
Chlorogenic Acid	353
Cathechin\Epicathechin	289

Gallocatechin\Epigallocatechin Gallate	457
Gallocatechin\Epigallocatechin	305
Cathechin Gallate	441
Procianidin	577
Myricetin	317
Kaempferol	285
Rutin	609
Narigin	579
Lycopene	536.1
Delphinidin3-Rutinoside-5-Galactoside	772.8
Delphinidin-3-Glucoside	465.2
Delphinidin-3-Rutinoside	611
N-Caffeoylputrescine	249
3-Caffeoylquinic Acid	353
Dihydroxycinnamoyl Amide	470
N,N'-Dicafeoylspermidine	468

Instrumental settings were configured for a selected ion monitoring (SIM) experiment in negative ion mode, except for syringic acid, lycopene, delphinidin-3-rutinoside-5-galactoside, delphinidin-3-glucoside, and delphinidin-3-rutinoside, which were analyzed using positive electrospray ionization (ESI) mode. Compounds were identified by comparing their characteristic fragmentation patterns with a proprietary molecular database. Identification was confirmed if the area under the curve (AUC) exceeded that of the control blank. Additionally, time-of-flight measurements were employed to distinguish between structurally similar molecules by determining their precise molecular weights in the third quadrupole