Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Amorphous Poly-N-vinylcarbazole polymer as a novel matrix for determination of low molecular weight compounds by MALDI-TOF MS

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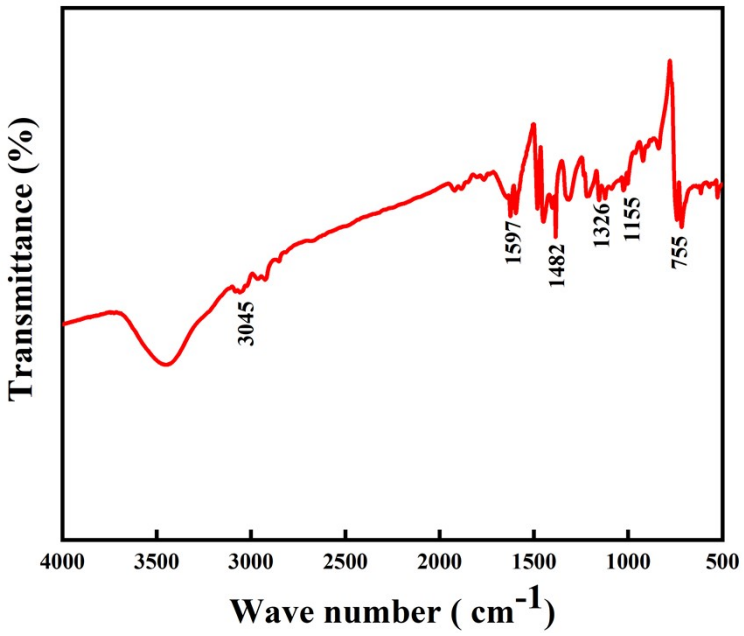


Fig. S1 Fourier-transform infrared spectroscopy of PVK

C–H stretching vibration peaks in aromatic rings (3045 cm^{-1}), and those in aliphatic groups (2800 – 2970 cm^{-1}). C = C vibration peak in benzene ring skeleton (1597 and 1482cm^{-1}). The C–N Tensile vibration peak in carbazole ring (1326 cm^{-1}) and the C–H out of plane bending vibration peak of benzene ring (745 cm^{-1}). C-C tensile vibration peak (1155cm^{-1}) in benzene ring skeleton, and the position of each peak is consistent with the literature[29].

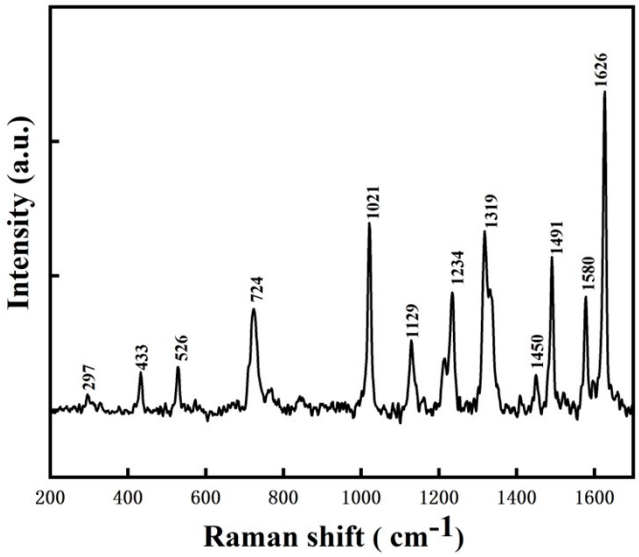


Fig. S2 The Raman spectra of PVK

Table S1 Raman vibrational frequencies (cm^{-1}) of PVK and the vibrational assignments

Raman spectra in the molecular powder state of PVK	Ascription
297(w)	CCC deformation vibration in long polyethylene chains
433(w)	Out of plane deformation and vibration of o-bis-p-benzene ring
526(m)	Out of plane deformation and vibration of o-bis-p-benzene ring
724(m)	Methylene in-plane rocking twisting vibration in long polyethylene chains
1021(s)	Methylene in-plane rocking twisting vibration in long polyethylene chains
1129(w)	In plane deformation and vibration of C-H in o-di-p-benzene ring
1234(m)	Out-of-plane rocking vibration of methylene groups in long polyethylene chains
1319(s)	Methylene in-plane rocking twisting vibration in long polyethylene chains
1450(w)	HCH deformation vibration in long polyethylene chains
1491(m)	Heteropentacyclic ring stretching vibration
1580(m)	O-bis-substituted para-phenyl ring stretching vibration
1626(s)	O-bis-substituted para-phenyl ring stretching vibration

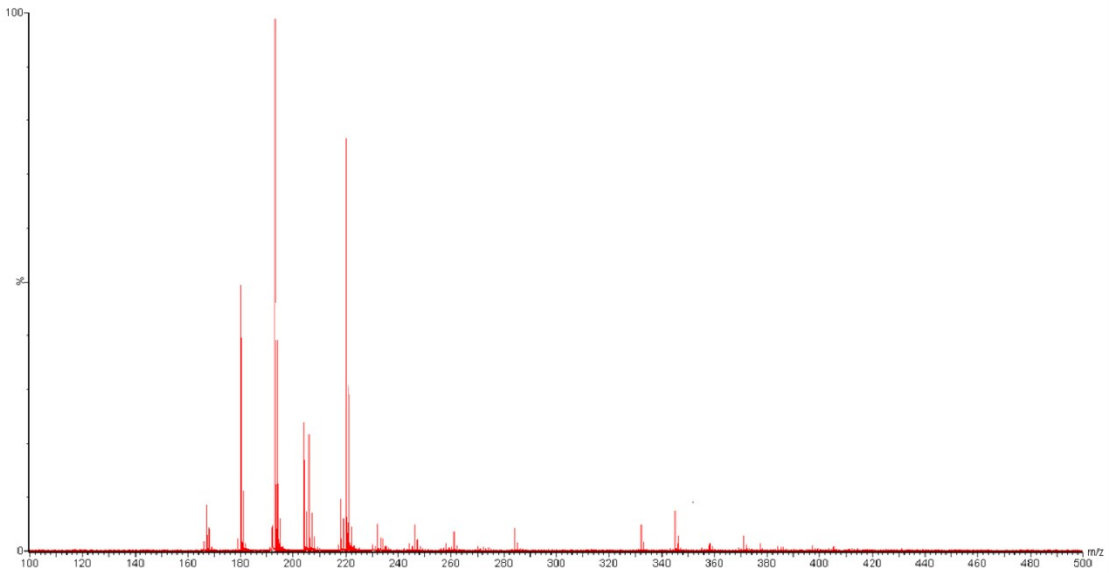


Fig.S3 LDI MS spectrum of purification PVK in positive ion mode

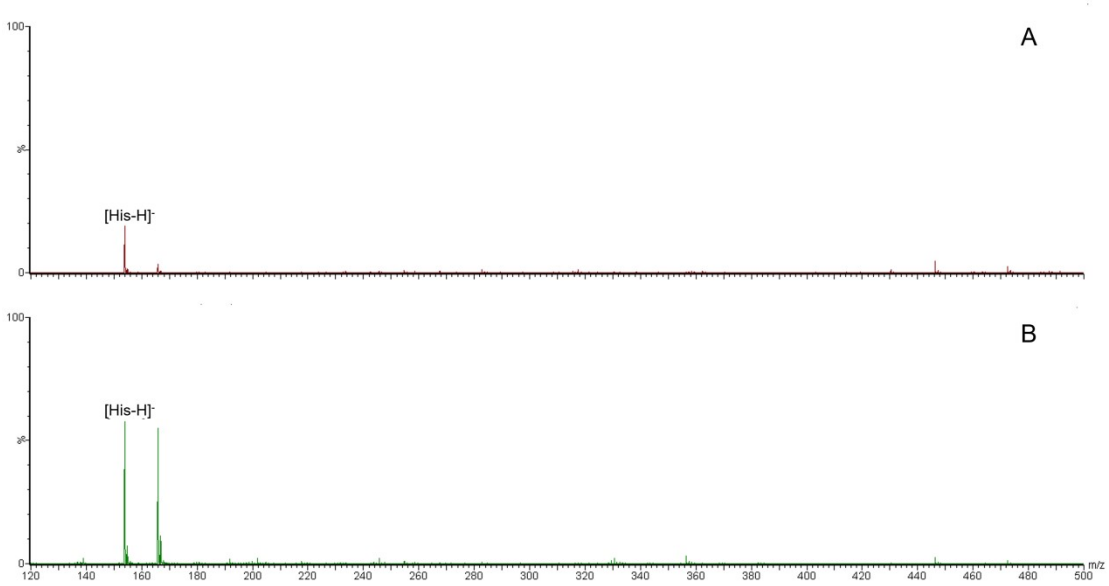


Fig. S4 Comparison of mass spectra of different solvents (A) THF, and (B) DCM dissolved matrix PVK for histidine detection by MALDI-TOF MS in negative ion mode

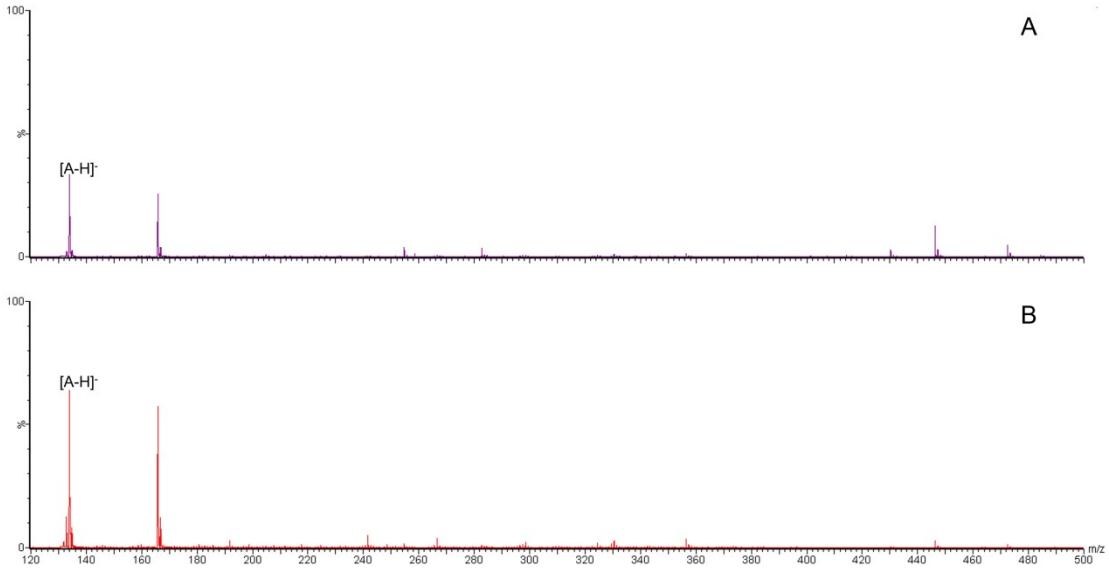


Fig. S5 Comparison of mass spectra of different solvents (A) THF, and (B) DCM dissolved matrix PVK for adenine detection by MALDI-TOF MS in negative ion mode

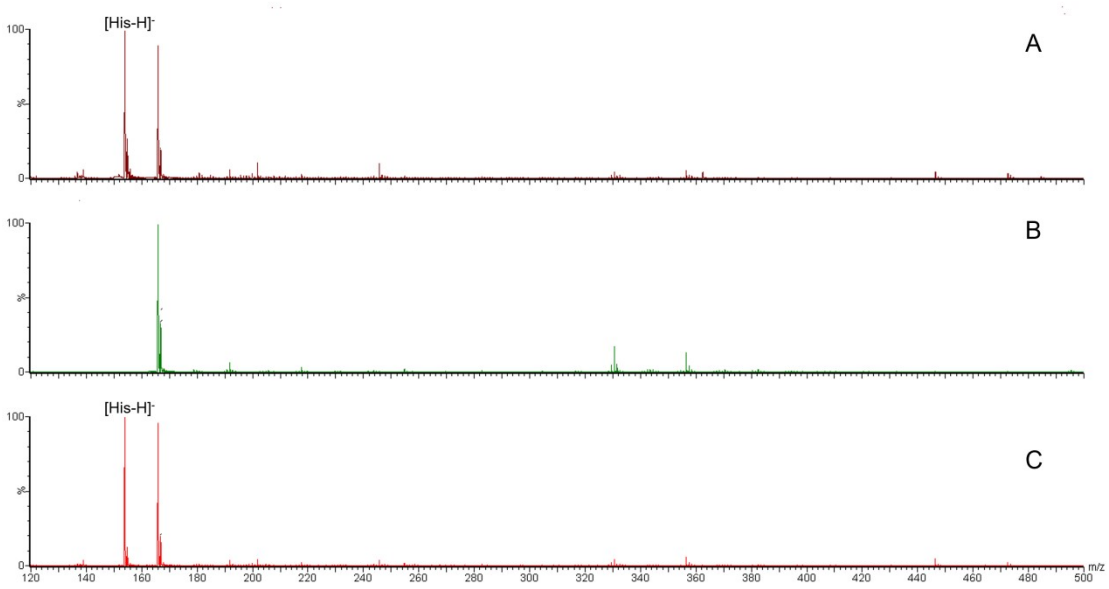


Fig. S6 MALDI-TOF MS spectrum of histidine with different spotting method included the sample first technique (A) the matrix first technique (B), and the dried-droplet technique (C) in negative ion mode

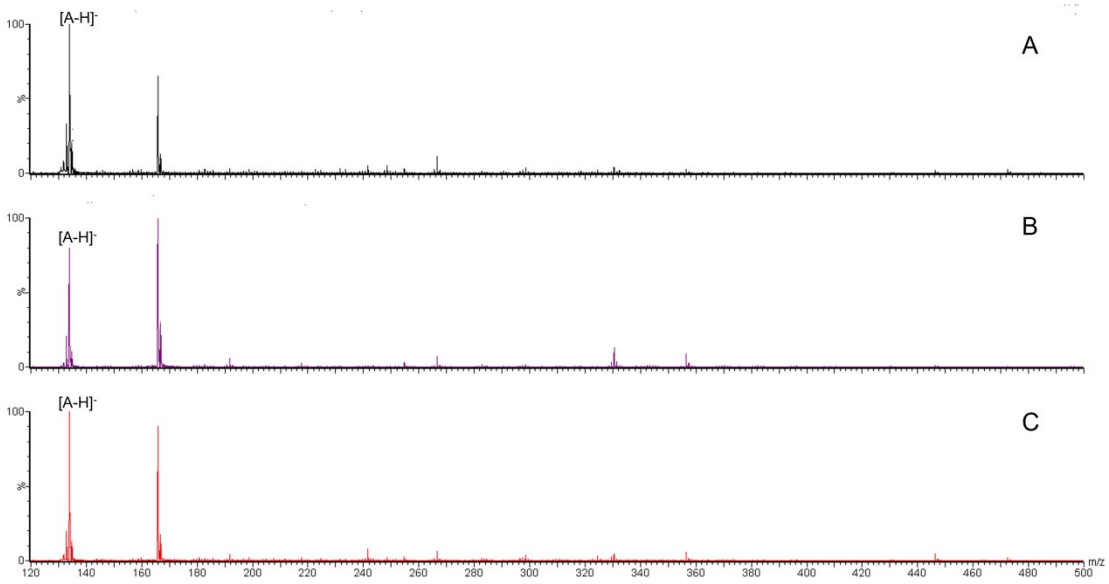


Fig. S7 MALDI-TOF MS spectrum of adenine with different spotting method included the sample first technique (A) the matrix first technique (B), and the dried-droplet technique (C) in negative ion mode

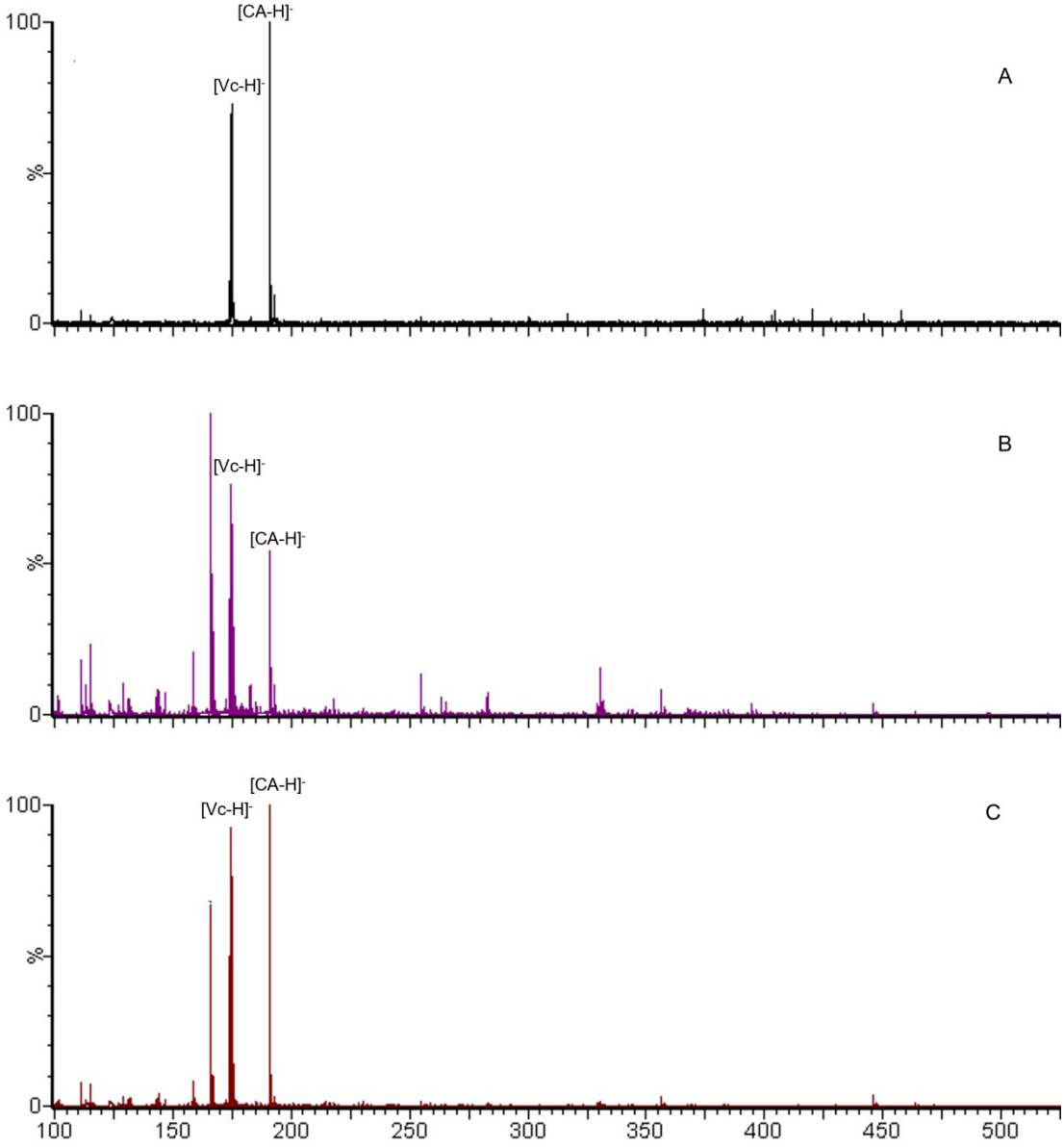


Fig. S8. MALDI-TOF MS spectrum of 1 mg/mL ascorbic acid and citric acid solution with 9-AA (A), VK(B), and PVK (C) matrix

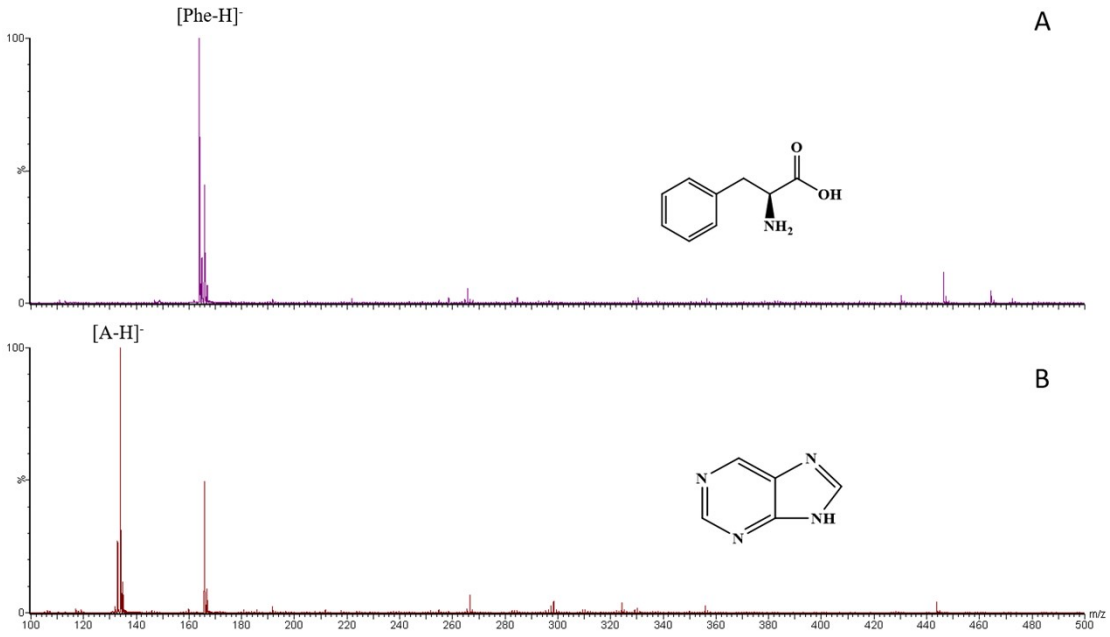
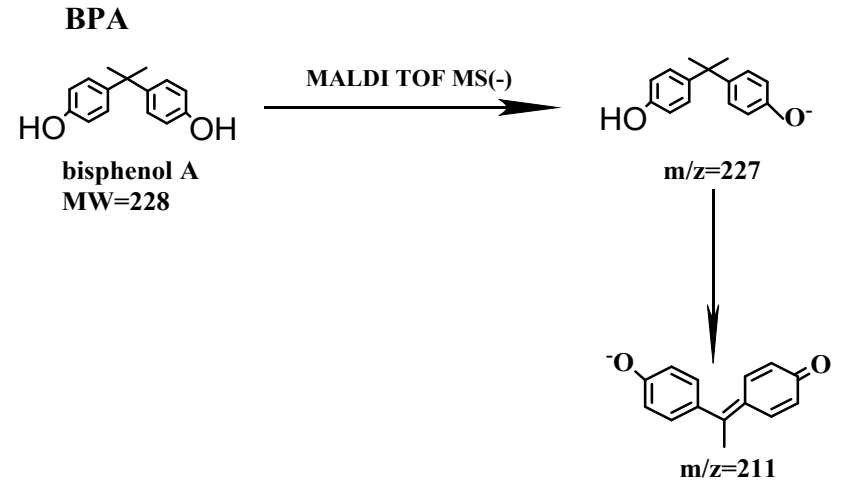
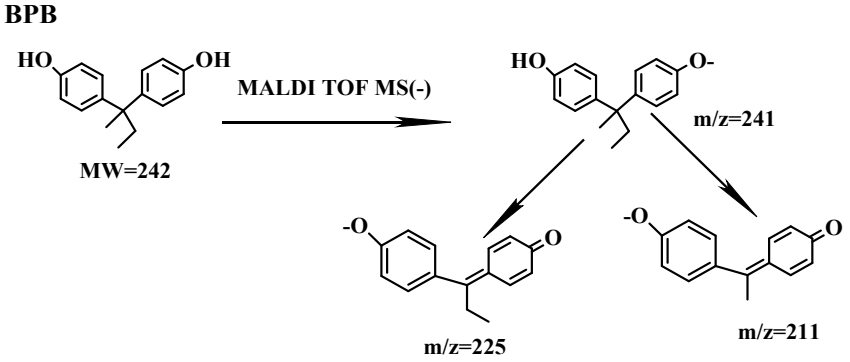


Fig. S9 MALDI-TOF MS spectrum of (A) phenylalanine and (B) adenine Using amorphous PVK as the matrix





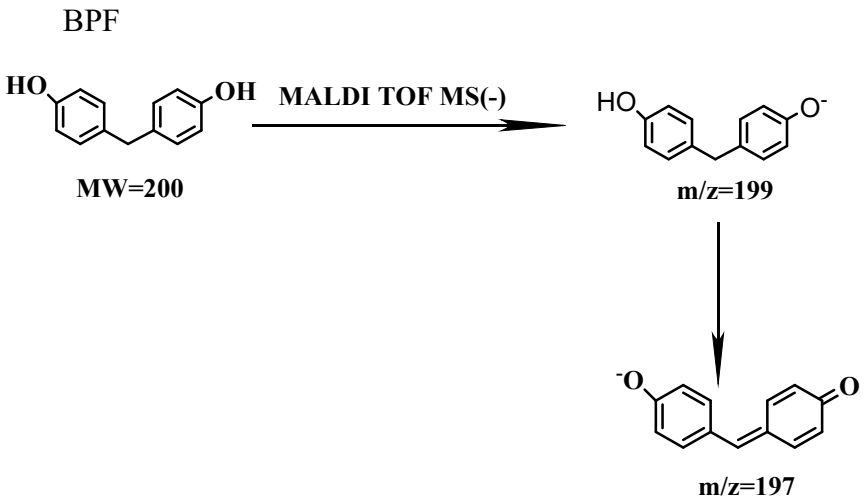


Fig.S10 Fragmentation pathways of BPs

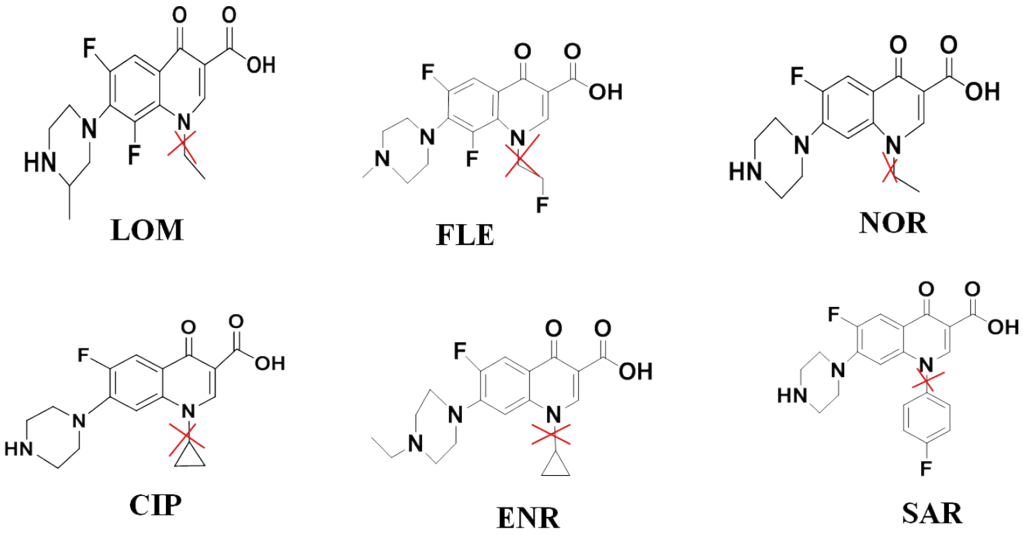


Fig. S11 Fragmentation pathways of quinolones

Table S2 The LOD of analytes measurement with the matrices of PVK.

Analyte	Detection limit (mg/mL)
ascorbic acid	0.01
citric acid	0.001
phenylalanine	0.001

methionine	0.001
threonine	0.001
adenine	0.001
uracil	0.001
thymine	0.001
stearic acid	0.001
palmitic acid	0.001
bisphenol A	0.0001
bisphenol B	0.0001
bisphenol F	0.001
bisphenol S	0.0001
lomefloxacin	0.001
fleroxacin	0.0001
norfloxacin	0.001
ciprofloxacin	0.001
sarafloxacin hydrochloride	0.001
enrofloxacin	0.001