

Development of a Screening Method for Fluoroquinolones in Meat Samples Using Molecularly Imprinted Carbon Dots

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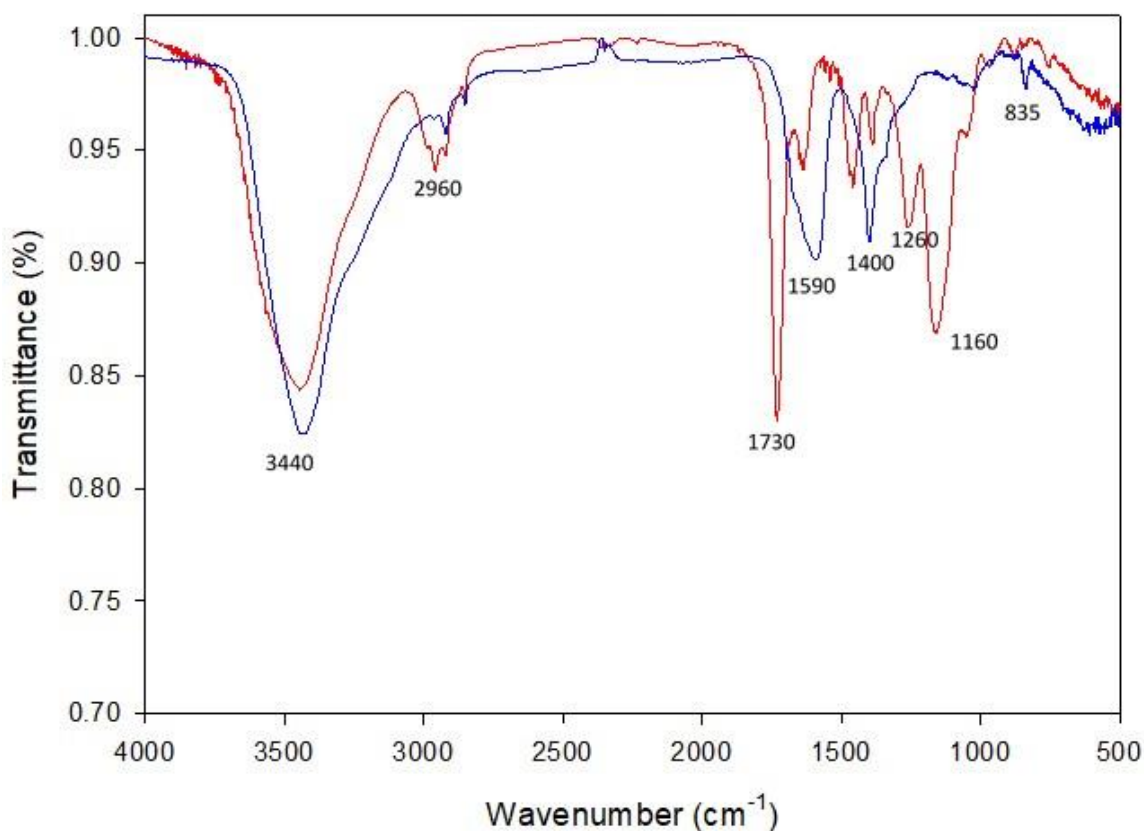


Figure S1. FTIR spectra of the MMC nanoparticles before (red line) and after (black line) MIP coating.

Table S1. Comparison of various methods for the determination of FQs.

Method	Analyte	LOD ($\mu\text{g mL}^{-1}$)	LOQ ($\mu\text{g mL}^{-1}$)	Sample	References
Poplar flower carbon dots (Pf-CDs)	ENRO	0.027	-	Milk and tap water	[32]
Mn-doped ZnS quantum dots (QDs)	CIPRO	0.15	0.50	Serum and urine samples	[33]
Nitrogen-doped fluorescent carbon dots (N-CDs)	ENRO	0.16	0.53	Tap water and river water	[34]
Yellow fluorescent carbon dots (Y-CDs)	NOR	0.0054	-	Tablets and milk samples	[35]
	CIPRO	0.012	-		
Sulfur-doped carbon dots (S-CDs)	NOR	0.0015	-	Bovine raw milk	[36]
	CIPRO	0.0022	-		
Carbon dots (CDs)	LEVO	0.00072	-	Water and milk samples	[37]
Uniform N- and S-co-doped carbon dots (NSCDs)	LEVO	0.0051	-	Water samples	[38]
Carbon dots (CDs)	CIPRO	0.0002	-	Eel Grass carp Freshwater shrimp	[39]
Lanthanide metal–organic frameworks	CIPRO	0.0056	-	Tap water and river water	[40]
	NOR	0.35			
	ENRO	0.0057			
	ENOX	0.018			
Micellization and metal complexation	LOME	0.0038	0.0114	Tablet and eye drop formulations	[41]
Quantum dots (QDs) incorporated into MIP	CIPRO	0.00007	-	Chicken muscle and milk	[42]
Own fluorescence of FQs	ENOX	0.2	0.6	Medicinal preparations	[43]
	ENRO	0.3	1.3		
	CIPRO	0.4	1.3		
	LEVO	0.2	0.6		
	LOME	0.5	2		
	DANO	0.2	0.6		
	SARA	0.3	1		
Nanocomposite optosensor	CIPRO	0.000066	0.00022	Chicken and milk samples	[20]
$\mu\text{SPE-UHPLC-MS/MS}$	NOR	Milk 0.012 $\mu\text{g kg}^{-1}$	0.04 $\mu\text{g kg}^{-1}$	Milk, animal muscle, liver, kidney, and egg	[25]
		Muscle/liver/kidney 0.012 $\mu\text{g kg}^{-1}$	0.04 $\mu\text{g kg}^{-1}$		
		Egg 0.024 $\mu\text{g kg}^{-1}$	0.08 $\mu\text{g kg}^{-1}$		
	CIPRO	Milk 0.024 $\mu\text{g kg}^{-1}$	0.08 $\mu\text{g kg}^{-1}$		
		Muscle/liver/kidney 0.060 $\mu\text{g kg}^{-1}$	0.20 $\mu\text{g kg}^{-1}$		
		Egg 0.060 $\mu\text{g kg}^{-1}$	0.20 $\mu\text{g kg}^{-1}$		
	LOME	Milk 0.016 $\mu\text{g kg}^{-1}$	0.06 $\mu\text{g kg}^{-1}$		
		Muscle/liver/kidney 0.024 $\mu\text{g kg}^{-1}$	0.08 $\mu\text{g kg}^{-1}$		
		Egg 0.012 $\mu\text{g kg}^{-1}$	0.04 $\mu\text{g kg}^{-1}$		
	ENRO	Milk 0.024 $\mu\text{g kg}^{-1}$	0.08 $\mu\text{g kg}^{-1}$		
		Muscle/liver/kidney 0.024 $\mu\text{g kg}^{-1}$	0.08 $\mu\text{g kg}^{-1}$		
		Egg 0.012 $\mu\text{g kg}^{-1}$	0.04 $\mu\text{g kg}^{-1}$		
Fluorescence detection	LOME	Milk: 0.00155	0.00468	Milk and beef	[29]
		Beef: 0.00078	0.00236		
	CIPRO	Milk: 0.00020	0.00061		
		Beef: 0.00103	0.00311		
MSPE–UV–Vis	CIPRO	0.04 nmol g ⁻¹	0.15 nmol g ⁻¹	Meat samples	[30]
Optical biosensor	ENRO	1 ppb	-	Meat and milk samples	[31]
	CIPRO				
SPE–HPLC–FLD	CIPRO	0.2 mg kg ⁻¹	0.5 mg kg ⁻¹	Animal feed	[26]
	DANO	0.04 mg kg ⁻¹	0.1 mg kg ⁻¹		
	ENRO	0.1 mg kg ⁻¹	0.4 mg kg ⁻¹		
	SARA	0.2 mg kg ⁻¹	0.6 mg kg ⁻¹		
SBSME–HPLC–FLD	CIPRO	0.1 ng g ⁻¹	0.3 ng g ⁻¹	Milk	[27]
	LOME				
	ENRO				
	LEVO				
MAE–SPE–UHPLC–FLD	CIPRO	6.0 ng g ⁻¹	20.2 ng g ⁻¹	Fish	[28]

HPLC–MS/MS	CIPRO	0.01	-	Human aqueous humor	[24]
Our method	ENOX	0.070	0.211	Beef, pork, and chicken samples	This work
	ENRO	0.067	0.221		
	CIPRO	0.062	0.186		
	LEVO	0.327	0.982		
	LOME	0.072	0.220		
	DANO	0.065	0.195		
	SARA	0.188	0.564		

SPE: Solid-phase extraction; UPLC: Ultra-high-performance liquid chromatography; MSPE: Magnetic solid-phase extraction; SBSME: Stir bar sorptive microextraction; MAE: Microwave-assisted extraction; MG-DSPE: Magnetic grapheme-based dispersive solid-phase extraction.