

Supplementary Information for:

Multi-functional porous organic polymers for high-efficient solid-phase extraction of β -agonists and β -blockers in milk

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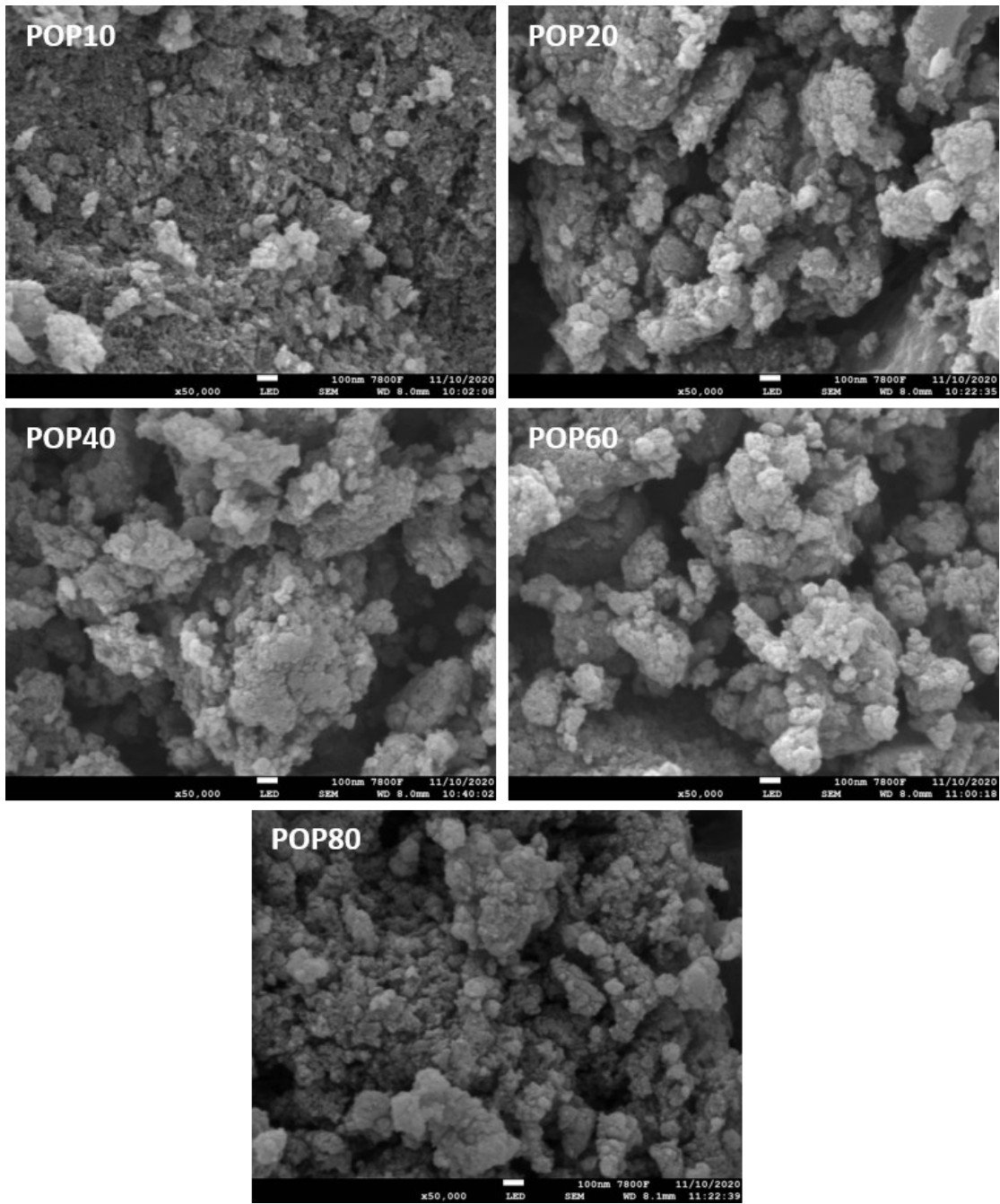


Figure S1. Scanning electron micrographs of different PPOP, a magnification of 50000

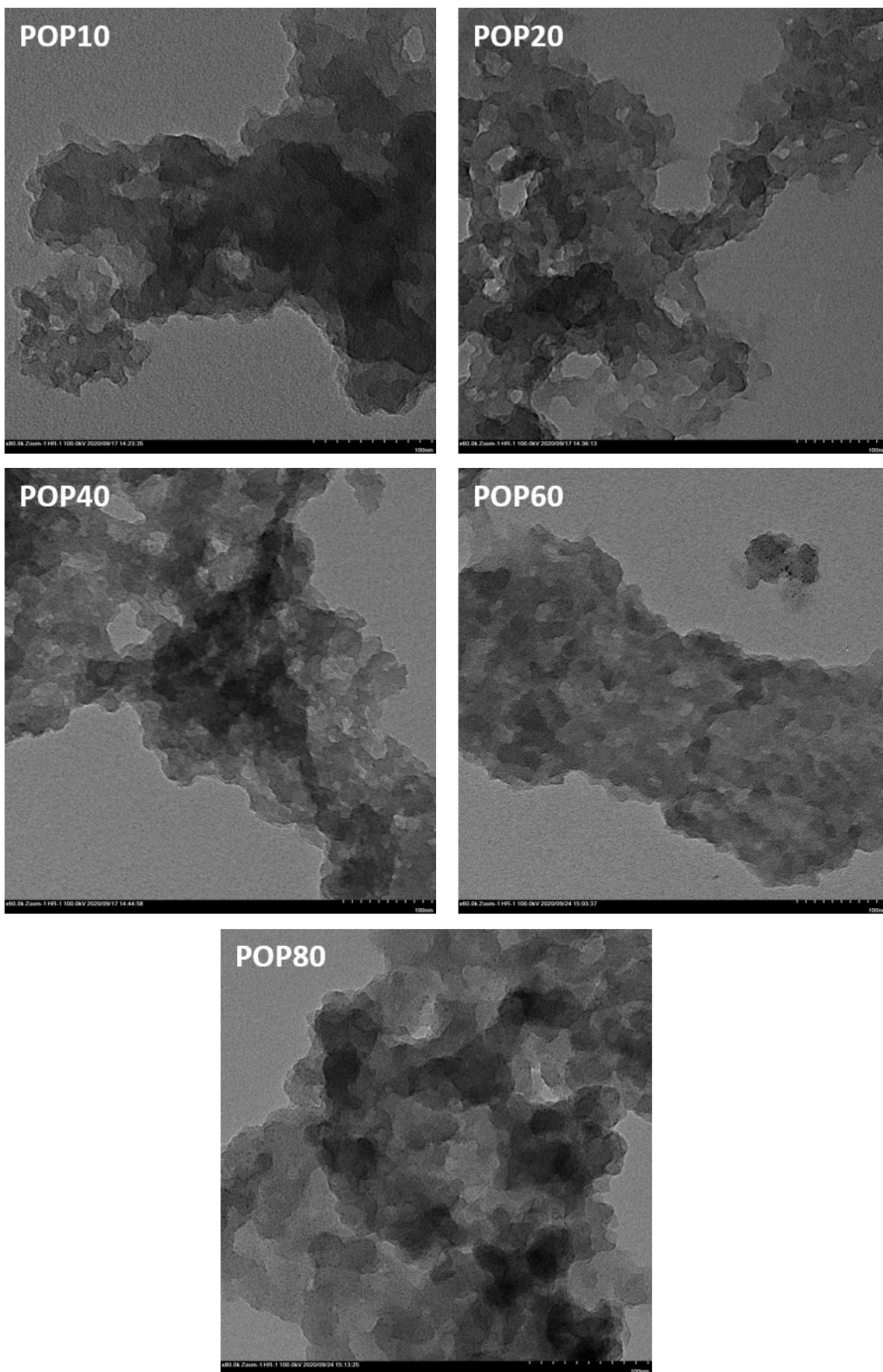


Figure S2. Transmission electron microscopy images of different PPOP, a magnification of 80000

Table S1. Linear relationship, Linear range, R², LOQ and LOD for β -agonists and β -blocks measurement

	Compound	CAS	Linear relationship	Linear range (ng·g⁻¹)	R²	LOQ (ng·g⁻¹)	LOD (ng·g⁻¹)
β - Agonists	Ractopamine	97825-25-7	Y=7738610+2902120*X	0.05-250	0.9978	0.05	0.02
	Salbutamol	18559-94-9	Y=10267000+2136560*X	0.05-500	0.9953	0.05	0.02
	Terbutaline	23031-25-6	Y=9637300+1981970*X	0.05-250	0.9966	0.05	0.02
	Cimaterol	54239-37-1	Y=3981600+2286420*X	0.1-250	0.9990	0.1	0.05
	Clenbuterol	37148-27-9	Y=17544100+1910210*X	0.05-1000	0.9958	0.05	0.02
	Tulobuterol	41570-61-0	Y=47793400+4923980*X	0.1-2500	0.9966	0.1	0.05
	Clorprenaline	3811-25-4	Y=13140700+3503330*X	0.05-500	0.9957	0.05	0.02
	Cimbuterol	54239-39-3	Y=54962500+1254910*X	0.05-5000	0.9950	0.05	0.02
	Brombuterol	41937-02-4	Y=26814500+612003*X	0.25-5000	0.9982	0.25	0.1
Mabuterol	56341-08-3	Y=92859200+1873960*X	0.05-5000	0.9955	0.05	0.02	
β - Blockers	Nadolol	42200-33-9	Y=1665400+2676120*X	0.05-500	0.9988	0.05	0.02
	Atenolol	29122-68-7	Y=6373340+2352660*X	0.05-500	0.9975	0.05	0.02
	Sotalol	3930-20-9	Y=362341+1654440*X	0.05-250	0.9991	0.05	0.02
	Betaxolol	63659-18-7	Y=9030370+4606520*X	0.05-500	0.9989	0.05	0.02
	Propranolol	525-66-6	Y=30536900+3760450*X	0.05-1000	0.9959	0.05	0.02

Table S2. The inter-day and intraday precisions achieved of β -agonists and β -blockers at spiking level of $5 \text{ ng}\cdot\text{g}^{-1}$ in milk.

	Compound	Inter-day RSD% (n=5)	Intraday RSD% (n=4)
β -Agonists	Ractopamine	4.8	3.9
	Salbutamol	3.0	3.4
	Terbutaline	3.7	6.1
	Cimaterol	1.7	3.9
	Clenbuterol	2.4	2.7
	Tulobuterol	4.6	5.3
	Clorprenaline	4.4	7.3
	Cimbuterol	11.7	7.1
	Brombuterol	4.3	8.6
	Mabuterol	8.5	11.7
β -Blockers	Nadolol	5.5	2.6
	Atenolol	9.8	12.2
	Sotalol	8.9	2.6
	Betaxolol	8.1	1.2
	Propranolol	4.3	4.8

Table S3. Comparison of the proposed method based on PPOP with other analytical methods for the determination of β -agonists and β -blockers in milk

Matrix	Target analyte number	Sample preparation	Detection method	LOD (ng/g)	LOQ (ng/g)	Reference
Raw milk	17	Extraction with ACN–ethanol with addition of EDTA	UPLC–ESI–MS/MS	-	0.05-0.2	1
Milk	6	Modified QuEChERS approach	UPLC-Q-TOF-MS	0.46-1.46	1.53-4.87	2
Milk powder	3	Solid–liquid extraction step with ultrasonic-assisted extraction	LC-ESI-MS/MS	-	0.09-0.66	3
Bovine milk	8	Mixed-mode cation exchange SPE	UPLC-Q-Trap-MS	0.2	0.5	4
Milk	15	PPOP SPE	UPLC-Orbitrap-MS	0.02-0.1	0.05-0.25	This work

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