

*Supporting information*

**Rapid on-site detection of imazaquin residue in corn and  
soybeans using an immunochromatographic assay**

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**Fig. S1.** Optimization of concentration of mAb and coating antigen (N, 0 mg/kg; P, 20  $\mu\text{g}/\text{kg}$  of IMQ).

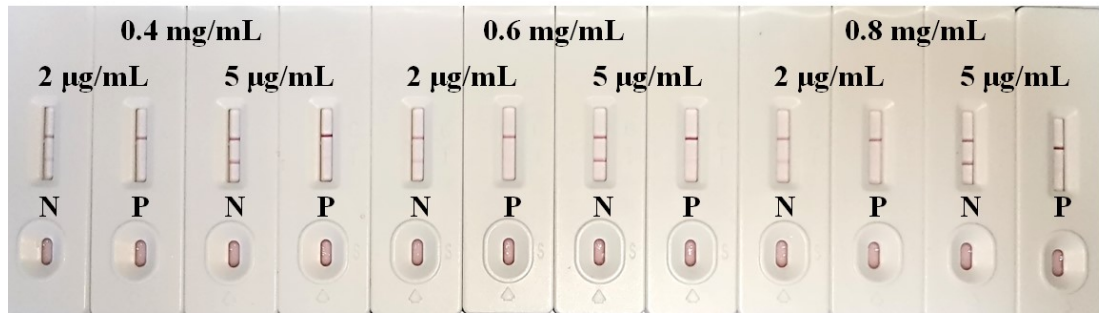
**Fig. S2.** The LC-MS/MS spectrums for the identification of samples. (a) Corn sample. (b) Soybeans sample. (c) The IMQ standard solution.

**Fig. S3.** The LC-MS/MS spectrums for spiking different concentration of IMQ samples. (a) 5  $\mu\text{g}/\text{kg}$  in corn. (b) 10  $\mu\text{g}/\text{kg}$  in corn. (c) 50  $\mu\text{g}/\text{kg}$  in corn. (d) 5  $\mu\text{g}/\text{kg}$  in soybeans. (e) 10  $\mu\text{g}/\text{kg}$  in soybeans. (f) 50  $\mu\text{g}/\text{kg}$  in soybeans.

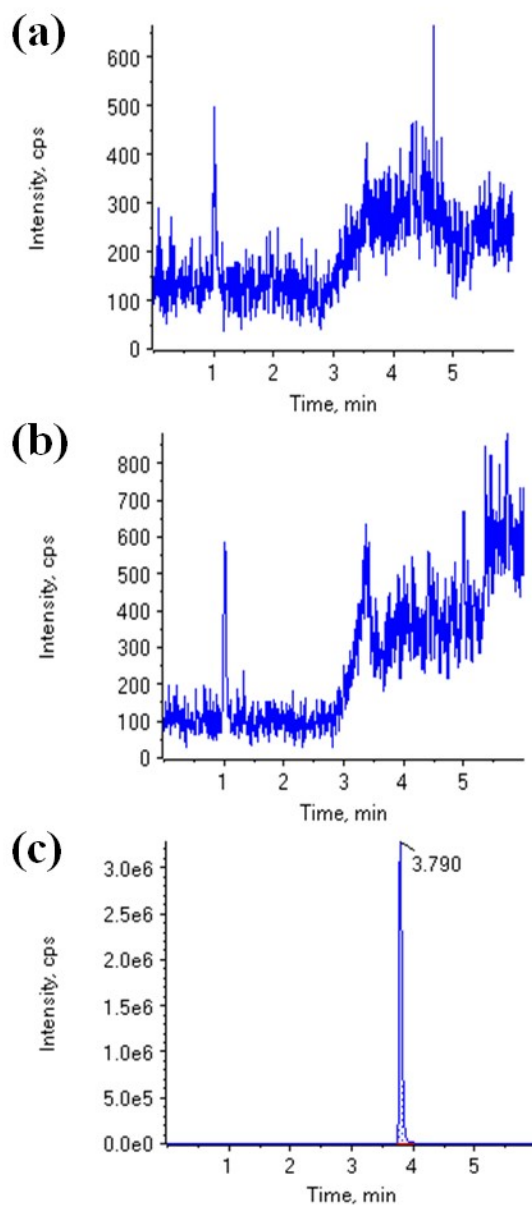
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**Table S2.** The comparisons of mAb performance.

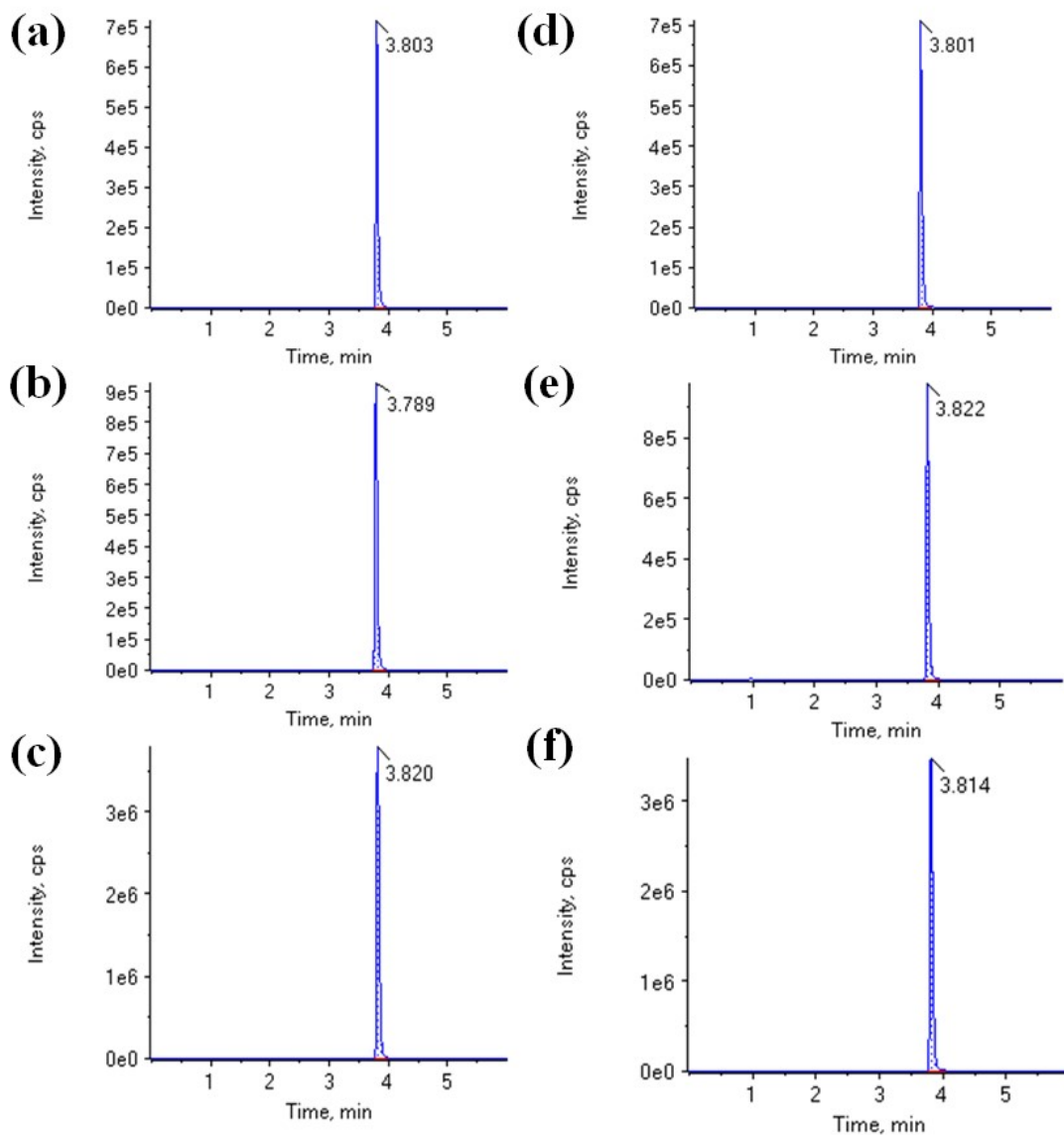
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**Table S1.** Instrument conditions for the analysis of IMQ by LC-MS/MS.

Instrument	AB SCIEX QTRAP 5500		
Chromatographic column	BEH C18 column (2.5 $\mu$ m , 2.1 $\times$ 50mm)		
Column temperature	40°C		
Injection volume	2 $\mu$ l		
Velocity of flow	0.30mL/min		
Mobile phase	A: 0.1% formic acid in water B: acetonitrile		
Gradient elution program	Time (min)	A	B
	0	95%	5%
	1	95%	5%
	4	5%	95%
	6	5%	95%
	6.1	98%	2%
	9	98%	2%
Mass spectrometry mode	Positive ion mode		

**Table S2.** The comparisons of mAb performance.

Analog	IC <sub>50</sub> (ng/mL)		
	mAb from IMQ (this work)	mAb from hapten 2 (Chin et al., 2002)	mAb from hapten 3 (Chin et al., 2002)
Imazaquin	0.98	5	-
Imazapyr	12.4	290	-
Imazethapyr	14.5	34	-
Imazapic	16.2	31	-
Imazamox	>20	34	-

**Table S3.** The comparisons of detection methods.

Detection methods	Detection time	Limit of detection (LOD) ( $\mu\text{g}/\text{kg}$ )	Simultaneously test the quantity of samples	References
ICA strips	15 min	0.26	Abundant	This work
UHPLC-MS/MS	At least 30 min	0.5	Several	(Heo et al., 2022)
GC-MS	At least 45 min	0.02	Several	(Ozcan et al., 2017)



## References

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