



Supplementary Information

Biodegradation and Metabolic Pathway of the Neonicotinoid Insecticide Thiamethoxam by *Labrys portucalensis* F11

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Table S1. Growth rate of *L. portucalensis* F11 in MSM media supplemented with TMX at the concentration 10.8 mg L⁻¹.

TMX supplementation	Growth rate (d ⁻¹)	R ²
TMX as sole carbon and nitrogen	0.0132 ± 0.0002	0.9911
TMX as sole carbon and sulfur	0.0097 ± 0.0006	0.9973
TMX as sole carbon	0.0198 ± 0.0002	0.9844
TMX + sodium acetate	0.0266 ± 0.0008	0.9943

Table S2. Growth rate of *L. portucalensis* F11 in the presence of increasing concentration of TMX.

TMX Concentration (mg L ⁻¹)	TMX as sole carbon source		TMX with periodic feeding with acetate	
	Growth rate (d ⁻¹)	R ²	Growth rate (d ⁻¹)	R ²
37.3	0.0133 ± 0.0005	0.9902	0.0274 ± 0.0003	0.988
68.6	0.0056 ± 0.0002	0.997	0.0235 ± 0.0004	0.9886
128.7	0.0058 ± 0.0002	0.9955	0.0155 ± 0.0007	0.9856

Table S3. Growth rate of *L. portucalensis* F11 in MSM medium supplemented with periodic feeding in sodium acetate.

MSM + sodium acetate	Growth rate (d ⁻¹)	R ²
	0.0214± 0.0007	0.98

Table S4. Results of toxicity tests.

Seed germination : <i>Lactuca sativa</i>		
Experiment	As sole carbon source	With periodic feeding with acetate
TMX= 10.8 mg L ⁻¹	No effect	No effect
Degradation products	No effect	No effect
TMX= 37.4 mg L ⁻¹	/	No effect
Degradation product	/	No effect
Bioluminescence test : <i>Vibrio fischeri</i>		
TMX= 10.8 mg L ⁻¹	19%	19%
Degradation product	0%	0%
TMX= 37.4 mg L ⁻¹	/	28%
Degradation product	/	0%
Toxi-chromo test: <i>E.coli</i>		
TMX= 10.8 mg L ⁻¹	7.4%	7.4%
Degradation product	0%	0%
TMX= 37.4 mg L ⁻¹	/	12.0%
Degradation product	/	0%

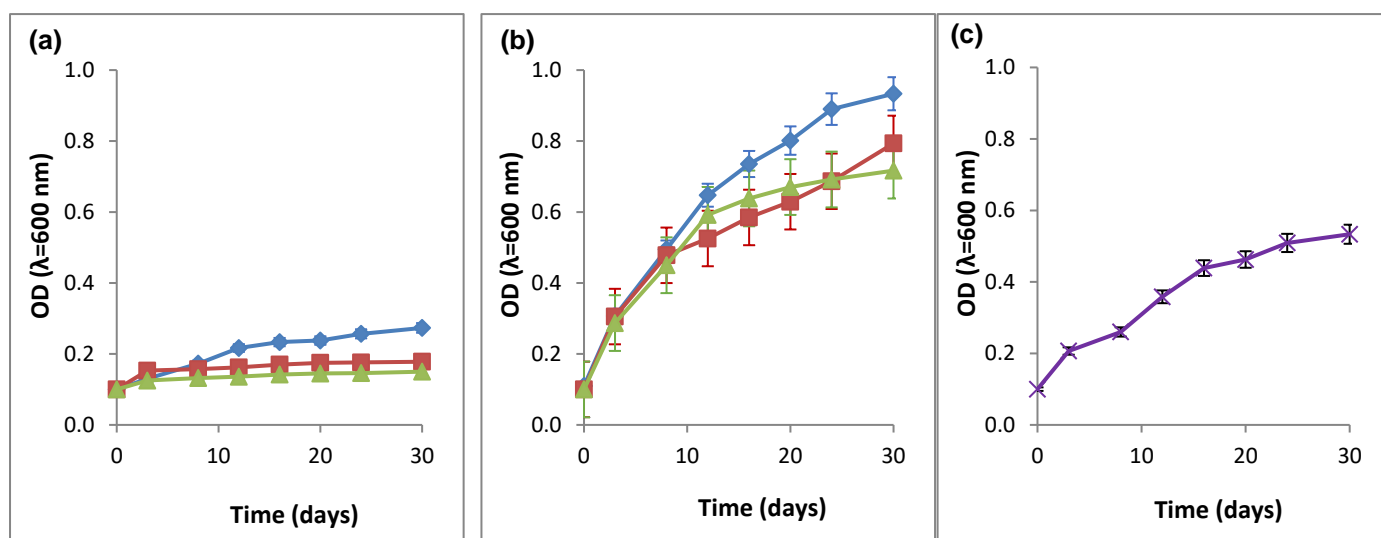


Figure. S1. Cell growth of *L. portucalensis* F11 during 30 days of incubation on MSM3 with TMX initial concentration: 37.4 mg L⁻¹ (♦), 68.6 mg L⁻¹ (■) and 128.7 mg L⁻¹ (▲) (a) as sole carbon source and (b) with periodic feeding on sodium acetate. (c) Cell growth of *L. portucalensis* F11 with periodic feeding on sodium acetate without TMX. Error bars presented means of three replicates ± standard deviation.

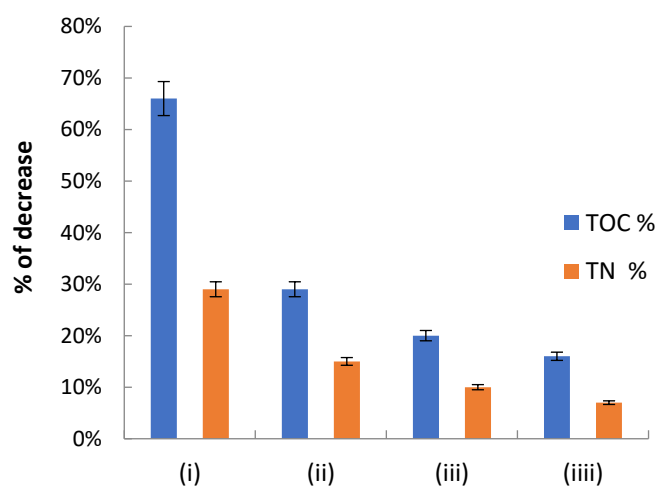
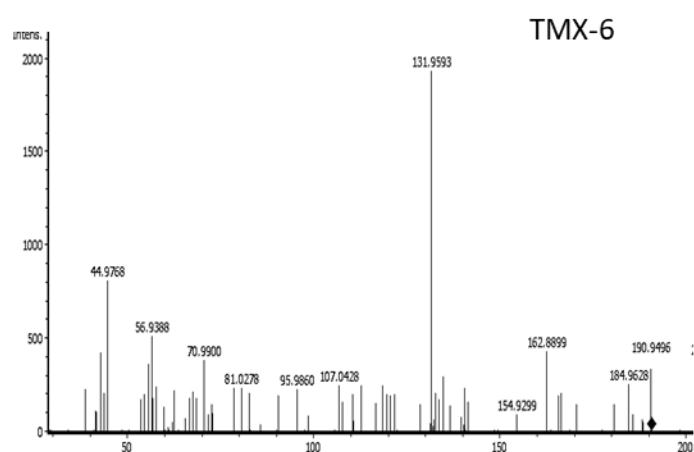
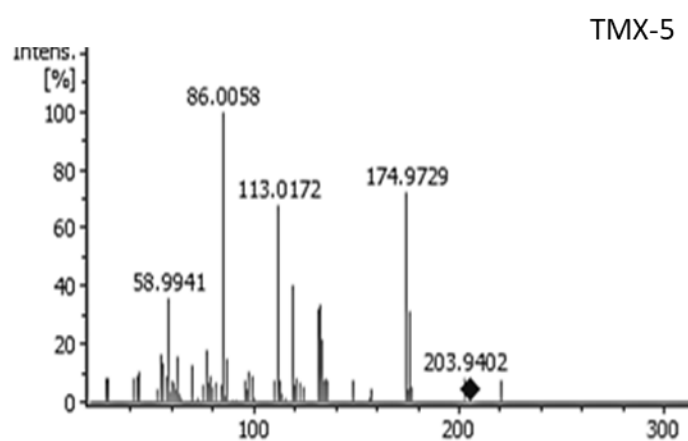
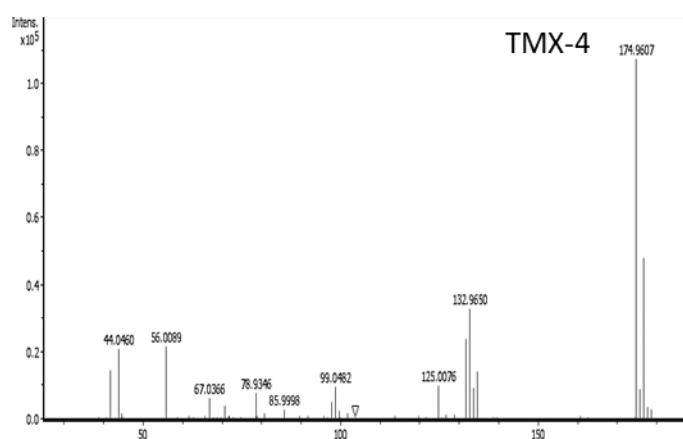
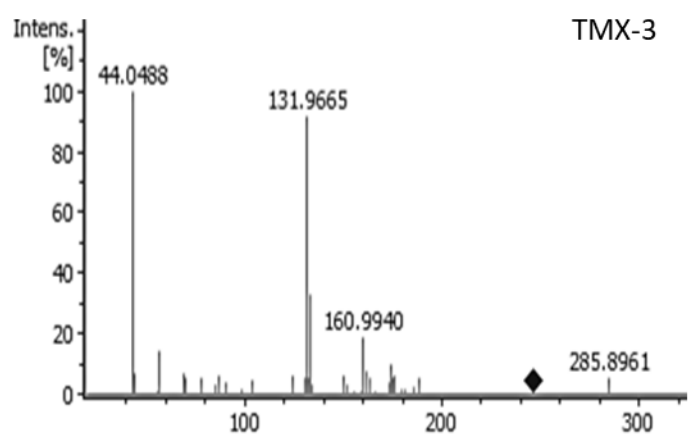
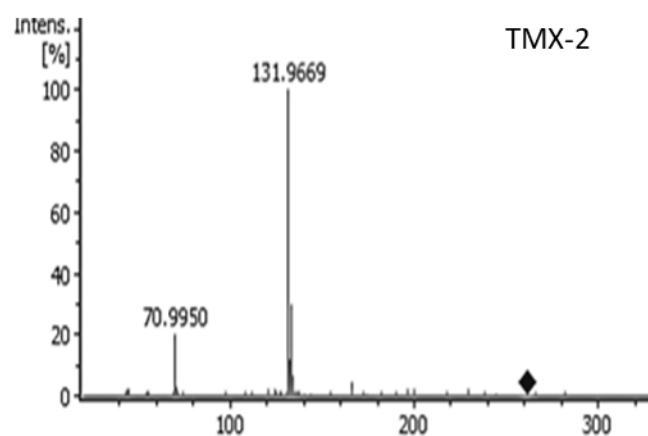
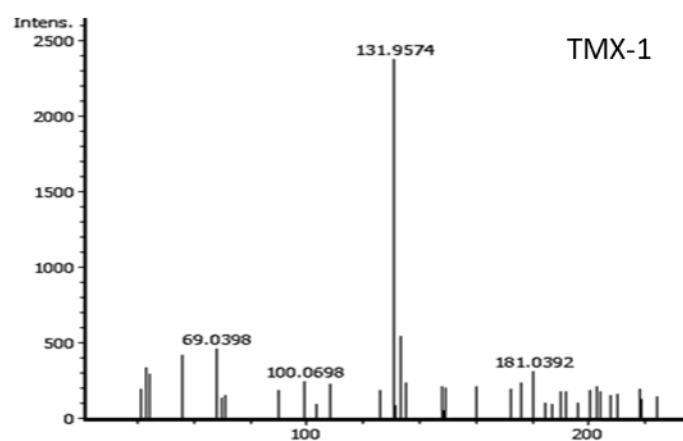


Figure.S2. Percentage of TOC and TN reduction during TMX degradation as sole carbon source: (i) 10.8 mg L⁻¹, (ii) 37.4 mg L⁻¹, (iii) 67.6 mg L⁻¹ and, (iiii) 128.7 mg L⁻¹.



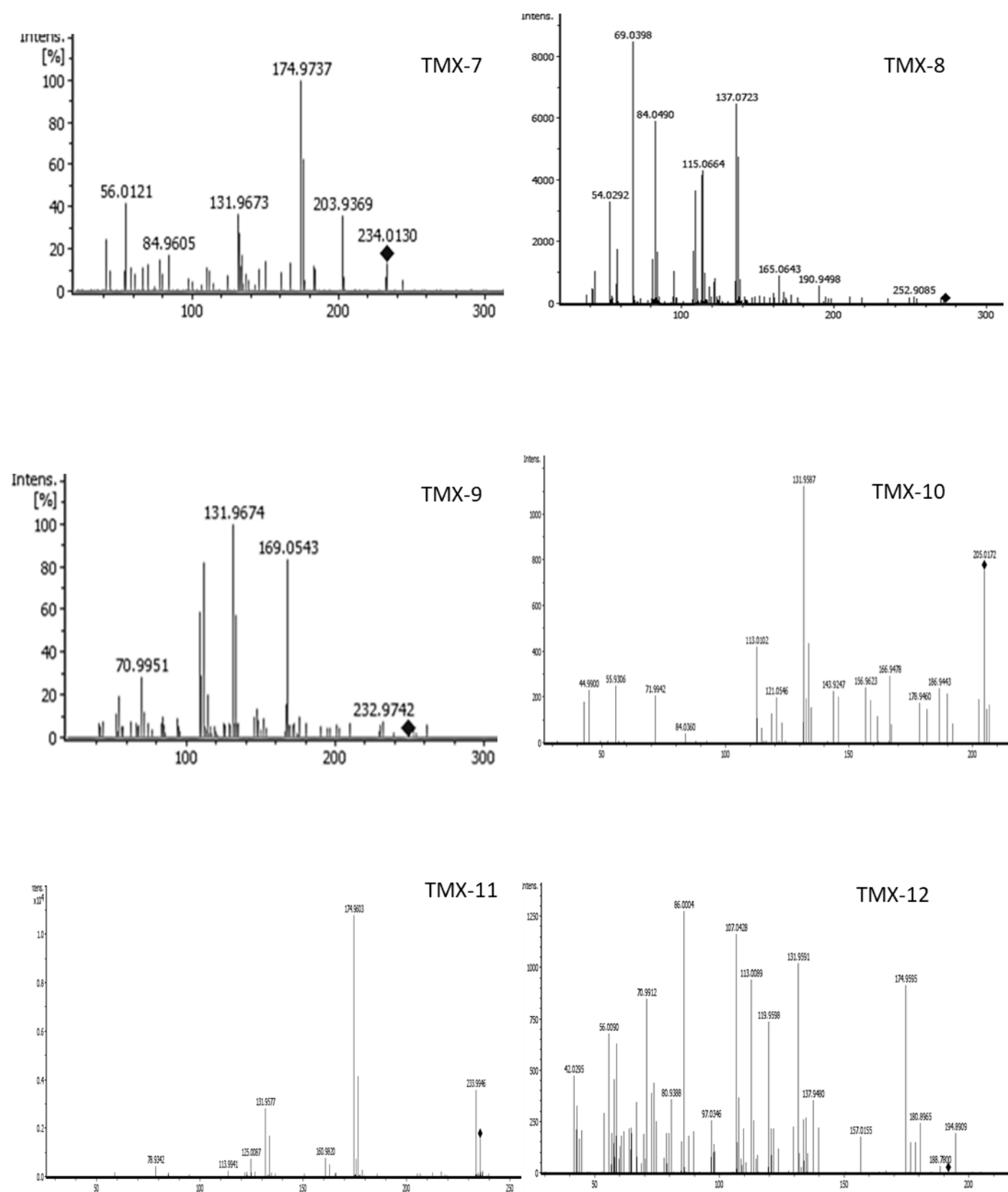


Figure S3. MS/MS spectra of the intermediate metabolites TMX1-TMX12.