

Supplementary material

Table S1. ICP-MS operating conditions and measured isotopes.

Component / Parameter	Specification / Value
Plasma gas flow	9.0 L min ⁻¹
Auxiliary gas flow	1.35 L min ⁻¹
Nebulizer gas flow	1.11 L min ⁻¹
Spray chamber temperature	3 °C
RF power	1400 W
Sampling depth	5.5 mm
Dwell time	30 ms
Scans per replicate	20
Number replicates per sample	3
iCRC gas (flow)	He, H ₂ (120 mL min ⁻¹)
Isotopes detected, mode “No Gas”	²⁴ Mg, ⁸⁵ Rb, ⁸⁸ Sr, ¹¹⁴ Cd, ¹³⁷ Ba, ²⁰⁸ Pb, ⁸⁹ Y, ¹⁰³ Rh and ¹⁹³ Ir
Isotopes detected, mode “iCRC, He”	⁵¹ V, ⁵² Cr, ⁵⁵ Mn, ⁵⁹ Co, ⁶⁰ Ni, ⁶³ Cu, ⁶⁵ Cu, ⁶⁶ Zn, ⁶⁷ Zn, ⁶⁸ Zn, ⁸⁹ Y, ¹⁰³ Rh and ¹⁹³ Ir
Isotopes detected, mode “iCRC, H ₂ ”	³⁹ K, ⁴⁴ Ca, ⁵⁶ Fe, ⁵⁷ Fe, ⁷⁵ As, ⁵⁶ Fe, ⁸⁹ Y, ¹⁰³ Rh and ¹⁹³ Ir

Table S2. Limits of detection (LOD). limits of quantification (LOQ), linearity (R²) and precision (RSD).

Elements	LOD (µg kg ⁻¹)	LOQ (µg kg ⁻¹)	Linearity R ²	RSD (%)
As	0.004	0.014	0.9997	9–11
Ba	0.0003	0.0009	1.0000	4–9
Ca	0.227	0.758	0.9998	2–4
Cd	0.0002	0.0007	1.0000	–
Co	0.001	0.002	1.0000	1–2
Cu	0.006	0.019	0.9999	9–12
Cr	0.035	0.116	1.0000	10–14
Fe	0.015	0.049	0.9997	4–9
K	0.313	1.042	0.9999	1–2
Mn	0.010	0.033	1.0000	7–8
Ni	0.003	0.008	0.9998	13–15
Mg	0.176	0.588	0.9996	2–6
Rb	0.004	0.012	1.0000	1–3
Sr	0.001	0.004	1.0000	10–14
Pb	0.002	0.006	1.0000	1–2
V	0.011	0.037	1.0000	10–15
Zn	0.140	0.468	0.9999	6–8

Table S3. Median values and ranges of concentrations (mg kg⁻¹) of trace elements in soils extracts from Tunisia.

Element	Median value	Minimal – Maximal concentrations
Cd	0.01	[0.003–0.02]
Pb	0.01	[0.002–0.14]
Co	0.04	[0.02–0.13]
Cu	0.07	[0.0004–0.64]
As	0.07	[0.01–0.25]
Cr	0.14	[0.03–0.3]
V	0.15	[0.02–0.59]
Fe	0.25	[0.04–117]
Ni	0.25	[0.08–0.51]
Rb	0.39	[0.17 -0 .84]
Zn	1.86	[0.3–27.7]
Mn	3.23	[1.23–9.49]
Ba	21.5	[7.6–91.5]
Sr	25.6	[11.4–81.4]
Mg	191	[104–772]
K	194	[51.1–551]
Ca	4580	[3140–5990]