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CHEMISTRY & BIODIVERSITY

Supporting Information

Essential Elements as a Distinguishing Factor between Mycorrhizal Potentials of Two Cohabiting Truffle Species in Riparian Forest Habitat in Serbia

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Supporting information

Essential elements as distinguishing factor between mycorrhizal potentials of two cohabiting truffle species in riparian forest habitat in Serbia

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Table S1. t-test for equality of means

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Ca	77.449**	4	0.000	800.44432	10.33512
Cr	1.739^{ns}	4	0.157	0.59317	0.34104
Cu	-55.086**	4	0.000	-18.78648	0.34104
Fe	-30.581**	4	0.000	-116.95599	3.82442
K	-166.257**	4	0.000	-2120.55420	12.75466
Mg	20.966**	4	0.000	95.26475	4.54369
Mn	0.574^{ns}	4	0.493	0.356	/
Na	-24.265**	4	0.000	-50.81329	2.09413
P	-116.757**	4	0.000	-614.57225	5.26369
S	23.711**	4	0.000	135.51738	5.71541
Zn	-102.782**	4	0.000	-95.38570	0.92804

ns - Not significant ($P \geq 0.05$), ** - Statistically significant difference ($P \leq 0.01$).

Table S2. Content of adsorbed cations

Element	Ca	K	Mg	Na
Concentration (cmol/kg)	22.8	0.5	7.5	0.4

Table S3. Correlation matrix for elements in *T. magnatum*

	Ca	Cr	Cu	Fe	K	Mg	Mn	Na	P	S	Zn
Ca	1	-.846	-.885	.999[a]	.706	-.815	-.885	.747	.554	.350	-.846
Cr		1	.500	-.822	-.975	.381	.500	-.277	-.912	-.795	1.000[b]
Cu			1	-.904	-.294	.991	1.000[b]	-.971	-.101	.127	.500
Fe				1	.674	-.840	-.904	.775	.517	.309	-.822
K					1	-.165	-.294	.056	.981	.910	-.975
Mg						1	.991	-.994	.031	.257	.381
Mn							1	-.971	-.101	.127	.500
Na								1	-.141	-.362	-.277
P									1	.974	-.912
S										1	-.795
Zn											1

[a,b] - Correlations are significant at $P\leq0.05$ and $P\leq0.01$, respectively.

Table S4. Correlation matrix of elements in *T. brumale*

	Ca	Cr	Cu	Fe	K	Mg	Mn	Na	P	S	Zn
Ca	1	./	./	.957	.751	.941	.883	.999[a]	-.800	.999[a]	-.627
Cr		./[b]	./	./	./	./	./	./	./	./	./
Cu			./	./	./	./	./	./	./	./	./
Fe				1	.909	.804	.711	.967	-.593	.943	-.825
K					1	.484	.354	.774	-.204	.719	-.985
Mg						1	.990	.929	-.955	.956	-.327
Mn							1	.866	-.988	.904	-.189
Na								1	-.778	.997	-.655
P									1	-.827	.034
S										1	-.590
Zn											1

[a]-Correlations are significant at $P\leq0.05$. [b]- Can not be computed because at least one of the variables is constant.

Table S5. Correlation matrix of elements in the soil

	Ca	Cr	Cu	Fe	K	Mg	Mn	Na	P	S	Zn
Ca	1	.976	./[b]	-.040	-.108	-.553	.028	.954	.795	-.975	.676
Cr		1	./	-.255	-.321	-.721	-.189	.866	.645	-.904	.500
Cu			./	./	./	./	./	./	./	./	./
Fe				1	.998[a]	.854	.998[a]	.262	.574	-.182	.710
K					1	.888	.991	.196	.517	-.115	.660
Mg						1	.817	-.277	.065	.355	.240
Mn							1	.327	.629	-.249	.756
Na								1	.941	-.997	.866
P									1	-.910	.984
S										1	-.822
Zn											1

[a] Correlations are significant at $P \le 0.05$. [b]- Can not be computed because at least one of the variables is constant.

Experimental

Chemicals

For the preparation of samples for ICP-OES analysis, nitric acid (65%), hydrochloric acid (36%) purchased from VWR Chemicals (Canada), and hydrogen peroxide (30%) obtained from Merck (Darmstadt, Germany) were used for the preparation of the samples. All chemicals used for the experimental procedures were of analytical grade and used as such without further purification. The ultra-pure water was prepared using the Milli-Q system (Millipore Simplicity 185 System incorporating dual UV filters (185 and 254 nm).

ICP analytical parameters

The analytical parameters for the ICP-OES instrument were as follows: plasma power–1450W; coolant flow–13.00 l/min; pump speed–30rpm; auxiliary flow–1.00 l/min; nebulizer flow–0.80 l/min; plasma view–axial and radial; preflush time–total time 60sec, 10sec fast speed 60rpm (pump), 50sec normal speed 30rpm (pump). The method performance data are presented in Table S6.

Table S6. Method performance data

Element	LOD (mg/kg)	LOQ (mg/kg)	RSDr (%)	Measurement uncertainty (%)
Ca	0.17	0.35	4.69	9
Co	0.16	0.30	3.37	7
Cr	0.17	0.35	6.13	12
Cu	0.16	0.30	3.35	7
Fe	0.32	0.50	4.95	10
K	0.16	0.30	2.85	6
Mg	0.17	0.35	2.74	6
Mn	0.16	0.30	6.16	12
Na	0.16	0.30	3.27	7
P	0.32	0.50	3.88	9
S	0.32	0.50	2.57	10
Se	0.32	0.50	2.63	5
Zn	0.16	0.30	2.45	5

Soil analyses

The particle-size distribution of the soils was determined by combining sieving and the pipette methods.[1]

Basic chemical properties of soil were determined as follows: pH value of soil reaction was determined by pH meter using a glass (indicator) and a calomel (reference) electrode in suspensions soil:water and soil:1M KCl.[2] Calcium carbonate ($CaCO_3$) was detrmined by volumetric method (Scheibler calcimeter).[2] The percentage of organic matter (OC) and humus was determined by the Tyurin's method, with potassium dichromateas the oxidation agent.[3] The available phosphorus (P) and available potassium (K) were determined by Egner-Riehm method. For the extraction AL-extraction solution was used.[4] For the determination of Cation Exchange Capacity (CEC) 1M ammonium acetate was used.[5] After the extraction, concentrations of elements (Ca, Na, Mg, K) were determined by ICP-OES analysis and converted into cmol/kg, respectively.

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