Supporting information

Sphagnum moss and peat comparative study: metal release, binding properties and antioxidant activity

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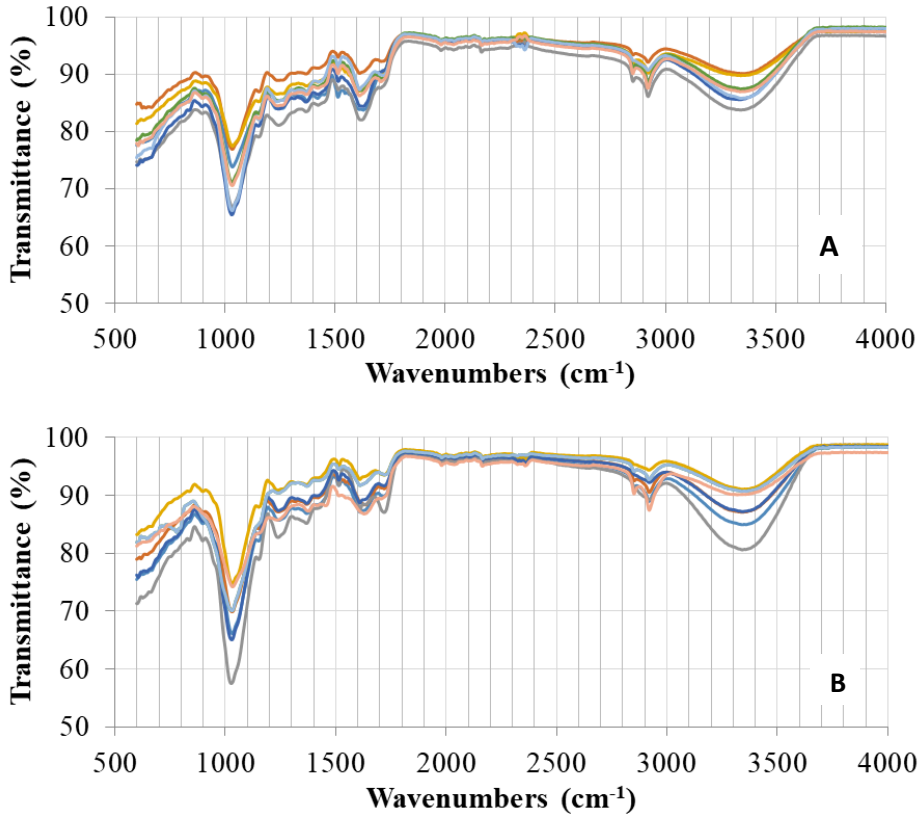

Figure S1. FTIR spectra of peat (A) and *Sphagnum* moss (B) samples (n = 8 for each material).

Table S1. Limit of determination and quantification (mg/kg) for each element at pH 5 and pH 2 (n = 10 for each pH value).

	pH = 5		pH = 2	
Element	**LOD**	**LOQ**	**LOD**	**LOQ**
Al27	0.4	1	2	8
As75	0.03	0.09	0.2	0.7
B11	1	5	1	4
Ba137	1	2	2	5
Be9	0.002	0.006	0.003	0.01
Bi209	0.0002	0.0007	0.0004	0.001
Ca44	10	40	100	400
Cd112	0.001	0.005	0.03	0.09
Ce140	0.0003	0.001	0.01	0.05
Co59	0.005	0.02	0.02	0.07
Cr52	0.1	0.2	0.02	0.06
Cs133	0.0001	0.0004	0.0005	0.002
Cu65	0.01	0.04	0.06	0.2
Fe56	0.3	0.9	1	3
Ga71	0.004	0.01	0.002	0.01
K39	60	200	40	150
La139	0.001	0.004	0.001	0.003
Li7	0.01	0.03	0.01	0.04
Mg24	7	20	3	8
Mn55	0.1	0.2	0.01	0.03
Mo98	0.02	0.07	0.02	0.08
Nb93	0.001	0.003	0.002	0.008
Ni60	0.4	1	0.1	0.4
P31	8	30	6	20
Pb208	0.005	0.02	0.005	0.02
Rb85	0.01	0.02	0.01	0.02
Sb121	0.2	0.7	0.1	0.2
Se76	0.1	0.2	0.2	0.8
Si28	60	200	70	200
Sn118	0.008	0.03	0.01	0.04
Sr88	0.3	1	0.1	0.4
Te125	0.002	0.007	0.01	0.04
Ti49	0.04	0.1	0.05	0.2
Tl205	0.001	0.003	0.003	0.01
U238	0.0003	0.001	0.0003	0.001
V51	0.1	0.2	0.02	0.05
W182	0.01	0.04	0.02	0.07
Zn66	0.05	0.2	5	20
Zr90	0.002	0.008	0.003	0.009

Table S2. Spearman correlation coefficients (r) between all leachable elements in peat (n = 8, replicates = 3).

	Na	Mg	Ti	Co	Ni	Cu	Ga	Rb	Sr	Zr	Cd	Cs	Ba	La	Ce	Pb	U	Ca	V	Cr	Mn
Mg	**,940****	--																			
Ti	-0.128	-0.085	--																		
Co	-,625**	**-,726****	0.262	--																	
Ni	-,539*	-,691**	0.212	**,771****	--																
Cu	-0.427	-,538*	-0.191	,606*	,550*	--															
Ga	-0.316	-0.215	,553*	0.166	0.215	0.025	--														
Rb	-0.068	-0.165	0.179	0.312	0.353	0.429	-0.166	--													
Sr	**,720****	,679**	-0.144	-0.297	-0.479	-0.026	0.009	0.003	--												
Zr	-,677**	**-,724****	0.326	,526*	,608*	0.444	0.154	0.203	**-,712****	--											
Cd	-0.138	-0.162	-0.135	-0.112	-0.129	0.200	0.083	-0.121	0.159	0.085	--										
Cs	0.296	0.443	,690**	-0.334	-0.462	-,583*	0.249	-0.130	0.119	-0.109	-0.182	--									
Ba	-0.375	-,535*	0.071	**,750****	**,811****	,632**	0.080	0.403	-0.171	0.344	0.082	-,605*	--								
La	**-,764****	**-,774****	0.412	**,832****	**,737****	,615*	,540*	0.132	-0.376	,656**	0.076	-0.175	,632**	--							
Ce	**-,781****	**-,735****	0.382	**,829****	**,715****	,503*	0.479	0.150	-0.432	,541*	-0.088	-0.166	,615*	**,950****	--						
Pb	0.093	0.118	,674**	-0.141	-0.279	-0.338	0.144	-0.076	-0.044	0.194	0.088	**,834****	-0.456	-0.024	-0.135	--					
U	-,640**	**-,774****	0.329	**,941****	**,838****	,647**	0.107	0.379	-0.429	,691**	-0.044	-0.311	**,788****	**,841****	**,797****	-0.032	--				
Ca	0.240	0.194	0.068	-0.188	0.104	0.338	0.335	0.441	0.338	0.044	0.253	-0.102	0.185	0.006	-0.135	-0.150	-0.115	--			
V	-0.347	-0.382	**,762****	0.491	,500*	0.194	**,777****	0.035	-0.159	,518*	0.076	0.241	0.365	,694**	,550*	0.368	,526*	0.285	--		
Cr	0.115	0.179	-0.076	-0.279	-0.206	-,551*	-0.039	-0.429	-0.191	0.025	-0.201	0.178	-,553*	-0.343	-0.309	0.105	-0.382	-0.262	-0.101	--	
Mn	-0.010	-0.112	-0.400	0.279	,510*	,521*	-0.163	0.424	0.021	0.094	-0.106	**-,746****	,641**	0.135	0.171	**-,829****	0.262	0.462	-0.115	-0.167	--
Fe	-,558*	-0.494	0.224	**,750****	,602*	,541*	0.430	0.147	-0.191	0.329	-0.247	-0.222	,606*	**,832****	**,912****	-0.341	,659**	-0.029	0.409	-0.360	0.353

[a] Values in bold indicate strong Spearman correlation (0.7 to 1.0). The results were considered to be statistically significant with p-values of <0.05 ("*" = p <0.05; and "**" = p <0.01). When the percentage of values <limit of detection exceeded 30%, the element was excluded from the statistical elaboration (Al, As, B, Be, Bi, K, Li, Mo, Nb, P, Sb, Se, Si, Sn, Te, Tl, W, Zn).

Table S3. Spearman correlation coefficients (r) between all leachable elements in *Sphagnum* moss (n = 8, replicates = 3).

Elements[a]	Na	Mg	Ti	Co	Ni	Cu	Ga	Rb	Sr	Zr	Cs	Ba	La	Ce	Pb	U	Ca	V	Cr	Mn
Mg	**,808***	--																		
Ti	0.394	0.464	--																	
Co	-0.335	-0.286	-0.321	--																
Ni	-0.079	-0.393	0.071	0.536	--															
Cu	0.670	0.536	0.357	0.071	0.071	--														
Ga	0.335	0.571	**,893****	-0.143	0.107	0.357	--													
Rb	**,808***	**,893****	0.321	0.000	-0.107	0.429	0.429	--												
Sr	0.571	**,857***	0.393	0.071	-0.321	0.714	0.571	0.714	--											
Zr	-0.512	-0.679	0.000	-0.321	0.000	-0.643	-0.321	-0.679	**-,821***	--										
Cs	0.453	**,821***	0.500	-0.071	-0.250	0.107	0.679	**,821***	0.679	-0.500	--									
Ba	-0.039	-0.429	0.036	0.464	**,857***	0.393	0.000	-0.286	-0.214	-0.036	-0.536	--								
La	-0.493	-0.571	0.036	0.750	0.679	0.107	0.036	-0.429	-0.179	0.107	-0.393	0.750	--							
Ce	-0.493	-0.571	0.036	0.750	0.679	0.107	0.036	-0.429	-0.179	0.107	-0.393	0.750	**1,00****	--						
Pb	0.433	0.643	**,857***	-0.393	-0.286	0.143	0.750	0.536	0.464	0.000	0.750	-0.429	-0.286	-0.286	--					
U	0.335	0.143	0.679	-0.036	0.321	0.750	0.536	0.000	0.321	-0.107	-0.107	0.607	0.429	0.429	0.286	--				
Ca	0.670	0.536	0.357	0.071	0.071	**1,00****	0.357	0.429	0.714	-0.643	0.107	0.393	0.107	0.107	0.143	0.750	--			
V	0.197	0.143	0.714	0.071	0.429	0.643	0.714	0.000	0.357	-0.214	0.036	0.607	0.500	0.500	0.286	**,929****	0.643	--		
Cr	0.512	**,786***	**,786***	-0.321	-0.143	0.214	**,893****	0.679	0.607	-0.357	**,893****	-0.357	-0.357	-0.357	**,857***	0.214	0.214	0.357	--	
Mn	0.493	0.071	-0.179	0.429	0.607	0.357	-0.214	0.429	0.000	-0.321	-0.071	0.536	0.179	0.179	-0.250	0.107	0.357	0.000	-0.179	--
Fe	-0.335	-0.393	-0.357	**,964****	0.607	0.179	-0.214	-0.143	0.000	-0.286	-0.286	0.643	**,821***	**,821***	-0.536	0.107	0.179	0.179	-0.464	0.464

[a] Values in bold indicate strong Spearman correlation (0.7 to 1.0). The results were considered to be statistically significant with p-values of <0.05 ("*" = p <0.05; and "**" = p <0.01). When the percentage of values <limit of detection exceeded 30%, the element was excluded from the statistical elaboration (Al, As, B, Be, Bi, Cd, K, Li, Mo, Nb, P, Sb, Se, Si, Sn, Te, Tl, W, Zn).