

Electronic Supplementary Information

Chemical composition and bioactivity of hemp, reed canary grass and common reed grown on boreal marginal land †

Marina Fidelis,^{a,f} Jenni Tienaho,^a Hanna Brännström,^b Risto Korpinen,^b Juha-Matti Pihlava,^b Jarkko Hellström,^a Paula Jylhä,^c Jaana Liimatainen,^b Veikko Möttönen,^d Jyri Maunuksela,^e Petri Kilpeläinen^b

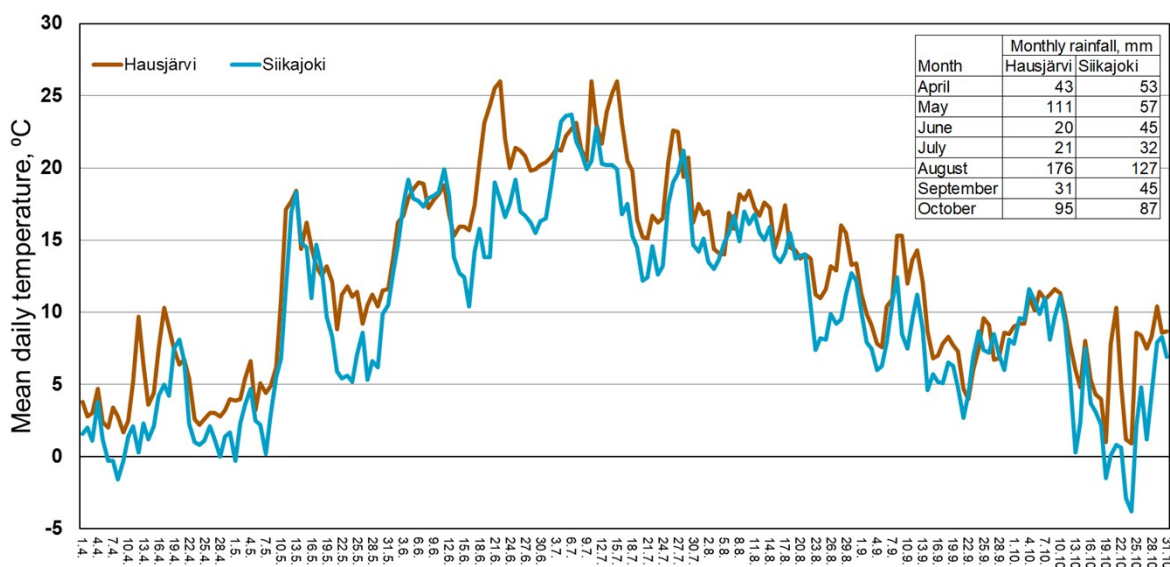


Fig. S1 Mean daily temperatures and monthly rainfalls at the nearby weather stations of the Finnish Meteorological Institute (Hyvinkää and Siikajoki) 1.4.2021–31.10.2021. Source: Ilmatieteen Laitos (available at <https://www.ilmatieteenlaitos.fi/havaintojen-lataus>)

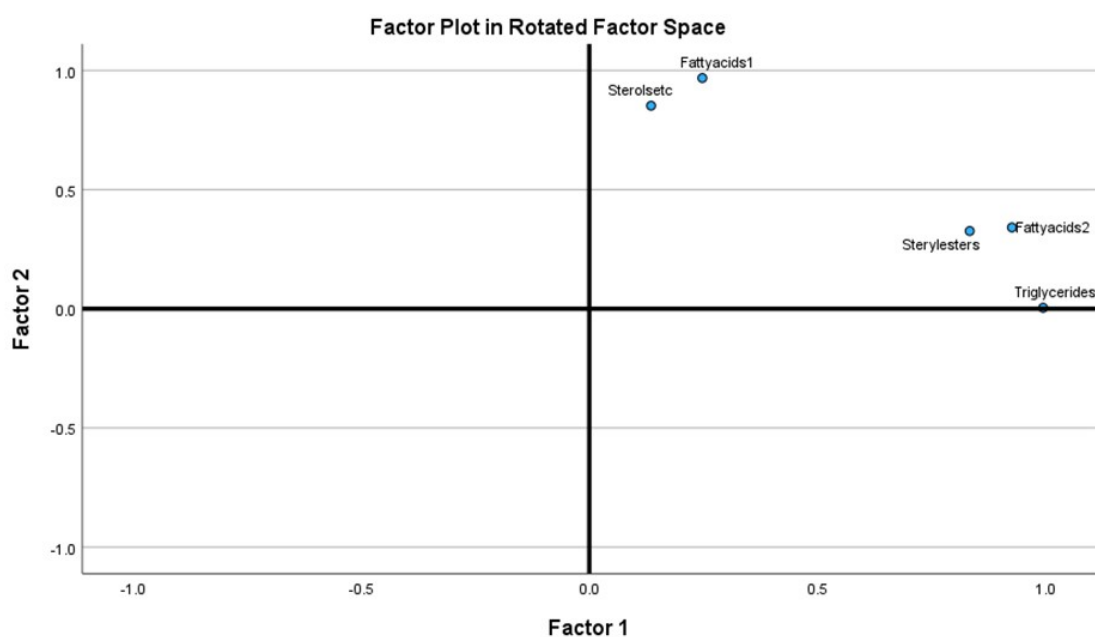


Fig. S2 Multivariate factor analysis. Factor analysis showing high factor loadings between triglycerides, fatty acids 2 and sterylesters (Factor 1), and fatty acids 1 and sterols etc.

Table S1 Rotated Factor Matrix

Rotated Factor Matrix ^a		
Compound group	Factor	
	1	2
Triglycerides	.995	
Fatty acids 2	.926	
Sterylesters	.834	
Fatty acids 1		.968
Sterols etc.		.852

Note: Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization. ^a Rotation converged in 3 iterations.

Table S2 Correlations of TDS, carbohydrates and protein content of PHW extracts with biological and antibacterial activity.

Determinator	Sampling	TPC	DPPH	CUPRAC	Fe (II) chelating ability	ORAC	<i>E. coli</i>	<i>S. aureus</i>
TDS	Summer	0.292	-0.263	0.105	-0.011	0.334	0.193	0.293
	Autumn	-0.020	-0.153	0.141	0.568**	-0.522*	0.249	-0.130
Man	Summer	0.287	-0.232	0.048	-0.029	0.454	0.163	0.233
	Autumn	0.330	0.382	0.054	-0.127	0.003	-0.342	0.458*
Glc	Summer	-0.136	-0.564*	-0.222	0.182	0.318	-0.034	-0.065
	Autumn	0.231	0.515*	0.306	0.153	-0.205	-0.363	0.404
Gal	Summer	0.068	-0.326	0.018	0.270	0.401	0.176	0.107
	Autumn	0.128	-0.018	0.145	0.240	-0.534*	0.207	0.112
Xyl	Summer	0.889**	0.662**	0.846**	-0.529*	0.271	0.794**	0.908**
	Autumn	0.331	0.276	0.432	-0.271	-0.256	0.352	0.133
Ara	Summer	0.658**	0.061	0.620**	-0.131	0.499	0.726**	0.756**
	Autumn	-0.065	0.054	0.185	-0.042	-0.266	0.184	0.037
Rha	Summer	-0.016	-0.372	-0.042	0.401	0.542*	0.098	-0.007
	Autumn	0.281	0.112	-0.096	0.124	-0.077	-0.235	0.242
GlcA	Summer	0.067	-0.189	0.066	0.251	0.205	0.153	0.133
	Autumn	-0.146	0.107	0.071	0.128	-0.401	-0.019	0.131
GalA	Summer	-0.228	-0.359	-0.132	0.671**	0.360	-0.049	-0.208
	Autumn	0.241	0.114	-0.109	0.302	-0.164	-0.299	0.229
4-O-Me-GlcA	Summer	0.871**	0.316	0.807**	-0.374	0.627*	0.872**	0.922**
	Autumn	0.583**	0.159	0.214	-0.087	-0.342	0.374	0.191
Total carbohydrates	Summer	0.551*	-0.055	0.452	-0.094	0.493	0.581*	0.608**
	Autumn	0.316	0.320	0.377	-0.129	-0.309	0.163	0.224
Protein content	Summer	0.087	-0.168	0.278	0.558**	0.731**	0.460*	0.093
	Autumn	-0.191	-0.239	-0.236	0.213	0.324	0.250	-0.584**

Note: Bold values represent statistically significant results. ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).