

Table S1. Linearity of the method measured for the 33 sphingolipids available as standards.

Analyte ¹	Conc ²	Eq. Conc ³	a ⁴	b ⁴	(R ²) ⁴	RSD (%) ⁵
dSo	0.1-6	2-120	0.9955	0.0124	0.9999	8
dSa	0.1-6	2-120	0.9932	0.0185	0.9997	3
d18:1 (So)	16-4000	320-80,000	0.9985	2.1619	1	4
d18:0 (Sa)	8-2000	160-40,000	0.9971	1.5219	1	3
18:1/2:0	1-63	20-1260	1.0077	0.1517	0.9999	7
18:0/2:0	2-125	40-2500	0.9898	0.6935	0.9996	7
d18:1P	63-1000	1260-20,000	1.0021	-2.1379	0.9989	7
d18:0P	63-1000	1260-20,000	1.0339	-28.614	0.9989	12
GluSo	0.5-31	10-620	0.9857	0.1586	0.9993	6
LysoSM	2-31	40-620	1.0011	0.0265	1	10
18:1/14:0	4-250	80-5000	1.0012	-0.2492	1	6
18:1/16:0	500-32,000	10,000-640,000	0.9969	31.042	1	8
18:0/16:0	16-4000	320-80,000	0.9977	2.5003	1	11
18:1/18:0	63-4000	1260-80,000	1.0017	-3.1509	1	13
18:1/20:0	31-2000	620-40,000	1.0049	-4.2797	0.9999	12
18:1/16:0P	63-1000	1260-20,000	1.0008	-1.0981	1	17
18:1/22:0	250-16,000	5000-320,000	0.9856	65.638	0.9996	9
LacSo	2-125	40-2500	0.8262	2.1642	0.9978	10
18:1/24:1	250-16,000	5000-320,000	0.9963	50.453	0.9999	7
18:1/24:0	125-8000	2500-160,000	0.9985	4.2147	1	14
18:0/24:0	8-2000	160-40,000	1.122	-25.72	0.9994	17
SM18:1/14:0	2-500	40-20,000	1.1542	-5.5697	0.9989	5
Glu18:1/16:0	16-4000	320-80,000	1.004	-5.5704	0.9999	13
SM18:1/16:0	250-16,000	5000-320,000	1.0082	-42.218	1	5
SM18:1/18:1	4-1000	80-20,000	1.0771	-5.5818	0.9997	4
SM18:1/18:0	125-32,000	5000-320,000	1.0055	-21.454	1	9
SM18:1/20:0	16-4000	320-80,000	0.9999	0.4259	1	10
SM18:1/22:0	250-16,000	5000-320,000	1.0061	-40.417	1	13
Glu18:1/24:1	8-2000	160-40,000	1.0008	-07942	1	12
SM18:1/24:1	125-32,000	5000-640,000	1.0575	-178.12	0.9995	9
SM18:1/24:0	16-4000	320-80,000	0.999	1.5599	1	11
Lac18:1/16:0	16-4000	320-80,000	1.0017	-3.0115	1	15
Lac18:1/24:1	8-2000	160-40,000	1.0898	-18.404	0.9989	13

¹dSo= deoxy-sphingosine, dSa= deoxy-sphinganine, So = sphingosine, Sa = sphinganine, GluSo = glucosyl-sphingosine, LysoSM = lyso-sphingomyelin, LacSo = Lactosylsphingosine, SM = sphingomyelin, Glu = glucosyl, Lac = lactosyl

²Conc = concentration in the net solvent expressed in pmol/mL, ratio between each concentration tested is 4, n = 4 per concentration

³Eq. Conc = equivalent concentration in liver expressed in pmol/g

⁴calibration curve: a = slope, b = y-intercept, R² = coefficient of determination

⁵RSD = relative standard deviation

Table S2. Intra-day and inter-day recovery of the internal standards measured in the liver of turkeys.

Analyte	Intra-day ¹		Inter-day ²	
	R (%)	RSD (%)	R (%)	RSD (%)
d17:1	57	20	61	21
d17:0	82	6	87	4
d17:1P	123	8	127	11
d17:0P	121	8	125	5
18:1/12:0	100	4	103	5
18:1/12:0P	126	7	119	9
Glud18:1C12:0	109	5	115	7
SM18:1/12:0	96	6	98	3
18:1/25:0	78	25	80	20
Lac18:1/12:0	117	6	122	6

¹Intra-day recovery (R) and intra-day repeatability (RSD) measured the same day on 12 samples spiked with the internal standards before extraction at 6,250 pmol/g liver

²Inter-day recovery (R) and intra-day repeatability (RSD) measured on 3 consecutive days on 4 samples per day spiked with the internal standards before extraction at 6,250 pmol/g liver

Table S3. Spearman correlation measured among different sphingolipids *.

Variables	dSa	So	Sa	18:1:2:0	18:0:2:0	GluSo	LyoSM	18:1:14:0	18:1:16:0	18:0:16:0	18:1:18:0	18:1:20:0	18:1:22:0	18:1:24:1	18:1:24:0	SM18:1:14:0	Glc18:1:16:0	SM18:1:16:0	SM18:1:18:0	SM18:1:20:0	SM18:1:22:0	Glu18:1:24:1	SM18:1:24:1	SM18:1:24:0	Lct18:1:16:0	18:1:18:1	18:0:18:0	18:0:20:0	18:1:22:2	18:1:22:1	18:0:22:0	
dSa	1	0.568	0.463	0.700	0.467	0.045	0.078	0.387	0.372	0.481	0.518	0.205	0.388	0.390	0.580	0.487	0.487	0.021	0.473	0.468	0.429	0.489	0.316	0.571	0.497	0.116	0.490	0.553	0.403	0.233	0.376	0.475
So	0.568	1	0.252	0.620	0.268	0.108	0.138	0.221	0.367	0.428	0.443	0.318	0.403	0.396	0.478	0.324	0.040	0.106	0.132	0.198	0.176	0.166	0.381	0.167	0.138	0.068	0.701	0.467	0.517	0.391	0.384	0.385
Sa	0.463	0.252	1	0.581	0.872	0.042	0.170	-0.376	-0.436	0.484	0.273	0.109	0.369	0.271	0.576	0.839	0.037	-0.536	-0.161	0.429	0.536	0.712	0.339	0.541	0.744	-0.221	0.518	0.764	0.378	0.182	0.155	0.781
18:1:2:0	0.700	0.620	0.581	1	0.540	0.155	0.062	0.128	0.192	0.471	0.721	0.388	0.443	0.708	0.565	0.279	-0.093	0.282	0.621	0.588	0.604	0.407	0.526	0.558	-0.047	0.711	0.726	0.424	0.387	0.453	0.293	0.793
18:0:2:0	0.467	0.268	0.872	0.540	1	-0.037	0.108	-0.334	-0.389	0.512	0.236	0.186	0.407	0.397	0.504	0.763	0.053	-0.431	-0.115	0.399	0.511	0.648	0.432	0.533	0.629	-0.198	0.435	0.726	0.478	0.349	0.293	0.793
GluSo	0.045	0.108	0.042	0.155	-0.037	1	0.759	0.000	0.140	-0.237	0.113	0.175	0.193	0.169	0.209	-0.104	0.166	-0.057	0.190	0.162	0.105	0.072	0.008	0.062	0.065	-0.128	0.125	-0.089	-0.116	-0.040	0.154	-0.069
LyoSM	0.078	0.138	0.170	0.062	0.108	0.759	1	-0.105	-0.035	-0.175	-0.078	-0.025	0.034	0.080	0.159	0.068	0.155	-0.062	0.101	0.075	0.086	0.112	0.132	0.141	-0.037	0.144	-0.014	-0.045	-0.155	-0.014	0.032	
18:1:14:0	0.387	0.221	-0.376	0.128	-0.334	0.000	-0.105	1	0.827	0.234	0.315	0.076	-0.021	0.072	0.011	-0.289	0.490	0.695	0.642	0.064	-0.046	-0.113	0.119	0.131	-0.085	0.659	-0.001	-0.096	-0.011	0.138	-0.238	-0.295
18:1:16:0	0.372	0.367	-0.436	0.192	-0.389	0.140	-0.035	0.827	1	0.172	0.353	0.145	0.065	0.168	0.063	-0.365	0.316	0.677	0.580	-0.034	-0.178	-0.266	0.167	-0.011	-0.279	0.445	0.085	-0.131	0.044	0.156	-0.247	-0.311
18:0:16:0	0.481	0.428	0.484	0.471	0.512	-0.237	-0.175	0.234	0.172	1	0.417	0.052	0.226	0.407	0.608	0.038	0.224	0.120	0.191	0.295	0.408	0.584	0.378	0.430	0.405	0.516	0.742	0.480	0.431	0.199	0.565	
18:1:18:0	0.518	0.443	0.273	0.721	0.236	0.113	-0.078	0.315	0.353	0.417	1	0.526	0.655	0.428	0.705	0.449	0.140	-0.042	0.252	0.704	0.637	0.566	0.224	0.355	0.483	-0.035	0.664	0.679	0.389	0.317	0.514	0.465
18:1:20:0	0.205	0.318	0.109	0.388	0.186	0.175	-0.025	0.076	0.145	0.052	0.526	1	0.913	0.854	0.647	0.200	0.069	-0.209	0.074	0.432	0.339	0.229	0.016	0.013	0.061	-0.316	0.287	0.289	0.695	0.934	0.464	
18:1:22:0	0.388	0.403	0.369	0.576	0.407	0.193	0.034	-0.021	0.065	0.226	0.655	0.913	1	0.848	0.869	0.477	0.027	-0.359	0.010	0.528	0.478	0.455	0.124	0.167	0.302	-0.371	0.494	0.556	0.760	0.617	0.850	0.705
18:1:24:1	0.390	0.396	0.271	0.443	0.397	0.169	0.080	0.072	0.168	0.226	0.428	0.854	0.848	1	0.720	0.368	0.194	-0.163	0.198	0.412	0.351	0.307	0.268	0.234	0.166	-0.261	0.300	0.385	0.767	0.760	0.901	0.603
18:1:24:0	0.580	0.478	0.576	0.708	0.504	0.209	0.159	0.011	0.063	0.407	0.705	0.647	0.869	0.720	1	0.722	0.102	-0.344	0.068	0.578	0.562	0.620	0.280	0.387	0.556	-0.212	0.651	0.742	0.704	0.414	0.628	
18:0:24:0	0.487	0.324	0.839	0.565	0.763	-0.104	0.068	-0.289	-0.365	0.608	0.449	0.200	0.477	0.368	0.722	1	-0.009	-0.494	-0.164	0.483	0.578	0.721	0.354	0.497	0.734	-0.147	0.601	0.902	0.580	0.190	0.236	0.920
SM18:1:14:0	0.487	0.040	0.037	0.279	0.053	0.166	0.155	0.490	0.316	0.038	0.140	0.069	0.027	0.194	0.102	-0.009	1	0.252	0.895	0.511	0.407	0.364	0.081	0.706	0.370	0.266	-0.201	0.002	-0.047	0.109	0.258	-0.078
Glc18:1:16:0	0.021	0.106	-0.536	-0.093	-0.431	-0.057	-0.062	0.695	0.677	0.224	-0.042	-0.209	-0.359	-0.163	-0.344	-0.494	0.252	1	0.511	-0.256	-0.303	-0.387	0.438	-0.033	-0.327	0.787	-0.139	-0.302	-0.178	0.125	-0.079	-0.504
SM18:1:16:0	0.473	0.132	-0.161	0.282	-0.115	0.190	0.101	0.642	0.580	0.120	0.252	0.074	0.010	0.198	0.068	-0.164	0.895	0.511	1	0.462	0.341	0.240	0.199	0.608	0.227	0.388	-0.156	-0.056	-0.070	0.197	0.261	-0.209
SM18:1:18:0	0.468	0.198	0.429	0.621	0.399	0.162	0.075	0.064	-0.034	0.191	0.704	0.432	0.528	0.412	0.578	0.483	0.511	-0.256	0.462	1	0.959	0.870	0.126	0.753	0.784	-0.208	0.350	0.571	0.220	0.310	0.474	0.439
SM18:1:20:0	0.429	0.176	0.536	0.588	0.511	0.105																										

Table S3. (continued) Spearman correlation measured among different sphingolipids *.

Variables	18:1:23:1	18:1:23:0	18:0:23:0	18:1:24:2	18:1:25:1	18:1:26:2	18:1:26:1	18:1:26:0	SM18:0/16:0	Hex18:1/18:0	SM18:0/18:0	SM18:0/20:0	SM18:1/22:2	Hex18:1/22:0	SM18:1/22:1	SM18:0/22:0	SM18:1/23:1	SM18:1/23:0	SM18:0/23:0	SM18:1/24:3	SM18:1/24:2	Hex18:1/24:0	SM18:0/24:1	SM18:0/24:0	SM18:1/25:2	SM18:1/25:1	SM18:1/25:0	SM18:1/26:3	SM18:1/26:2	SM18:1/26:1	SM18:1/26:0	Lac18:1/18:0	
dSa	0.390	0.567	0.433	0.319	0.687	0.557	0.692	0.382	0.537	0.249	-0.118	0.333	0.377	0.378	0.559	0.437	0.485	0.502	0.397	0.110	0.517	0.324	0.558	0.434	0.547	0.305	0.481	0.184	0.560	0.579	0.461	0.418	
So	0.476	0.541	0.286	0.384	0.488	0.527	0.557	0.506	0.200	0.437	-0.088	0.200	0.152	0.449	0.152	0.183	0.216	0.170	0.162	0.502	0.165	0.211	0.215	0.157	0.140	0.090	0.121	0.115	0.167	0.151	0.086	0.275	
Sa	0.229	0.604	0.882	0.257	0.667	0.385	0.487	0.226	0.683	0.151	0.084	0.520	0.374	0.416	0.476	0.832	0.494	0.791	0.870	0.099	0.529	0.569	0.778	0.810	0.603	0.475	0.722	0.026	0.562	0.548	0.555	0.300	
18:1:2:0	0.498	0.730	0.554	0.408	0.704	0.575	0.654	0.429	0.584	0.607	-0.132	0.441	0.459	0.656	0.495	0.544	0.502	0.592	0.511	0.217	0.518	0.464	0.540	0.527	0.490	0.291	0.514	0.066	0.523	0.496	0.474	0.532	
18:0:2:0	0.393	0.608	0.862	0.420	0.657	0.470	0.463	0.144	0.720	0.223	0.065	0.523	0.391	0.485	0.496	0.799	0.537	0.712	0.843	0.103	0.541	0.526	0.784	0.739	0.586	0.447	0.609	0.072	0.550	0.517	0.453	0.311	
GluSo	0.063	0.130	-0.116	0.095	0.121	0.005	0.076	-0.066	0.112	0.027	-0.164	-0.049	-0.016	0.070	0.097	-0.031	-0.072	0.039	-0.061	0.168	0.046	-0.041	0.019	-0.049	0.067	-0.007	0.031	0.069	0.067	0.064	0.051	0.278	
LysoSM	-0.055	0.060	0.039	-0.009	0.127	0.007	0.142	-0.051	0.161	-0.060	-0.124	0.014	0.056	0.083	0.138	0.088	0.011	0.097	0.067	0.146	0.103	0.070	0.172	0.100	0.137	0.071	0.123	0.053	0.117	0.149	0.109	0.247	
18:1:14:0	0.170	-0.035	-0.379	0.022	0.096	0.122	0.233	0.382	-0.109	0.156	-0.102	-0.120	0.077	0.051	0.131	-0.310	0.028	-0.172	-0.368	0.092	0.077	0.007	-0.138	-0.228	0.012	-0.002	-0.038	0.141	0.083	0.148	0.102	0.083	
18:1:16:0	0.239	0.054	-0.446	0.148	0.073	0.331	0.328	0.322	-0.215	0.267	-0.200	-0.230	-0.045	0.141	-0.003	-0.465	-0.056	-0.315	-0.513	0.165	-0.030	-0.130	-0.265	-0.427	-0.107	-0.134	-0.259	0.102	-0.028	-0.025	-0.139	0.181	
18:0:16:0	0.400	0.555	0.614	0.300	0.599	0.514	0.533	0.471	0.352	0.530	0.294	0.404	0.256	0.644	0.290	0.449	0.347	0.452	0.507	0.131	0.396	0.700	0.412	0.478	0.322	0.307	0.452	-0.110	0.314	0.345	0.369	0.080	
18:1:18:0	0.427	0.668	0.384	0.328	0.611	0.523	0.609	0.399	0.354	0.634	0.136	0.373	0.262	0.528	0.364	0.425	0.292	0.458	0.364	-0.005	0.292	0.368	0.318	0.428	0.295	0.174	0.405	0.000	0.393	0.423	0.481	0.475	
18:1:20:0	0.815	0.630	0.180	0.783	0.505	0.510	0.290	0.401	0.325	0.320	-0.027	0.123	0.144	0.251	0.077	0.206	0.127	0.129	0.134	0.248	0.033	-0.114	0.077	0.073	-0.079	-0.039	0.335	0.120	0.006	-0.029	0.480		
18:1:22:0	0.780	0.856	0.463	0.772	0.728	0.611	0.469	0.427	0.453	0.385	-0.020	0.272	0.211	0.398	0.205	0.444	0.228	0.373	0.385	0.230	0.170	0.088	0.268	0.310	0.249	0.036	0.183	0.313	0.271	0.173	0.166	0.571	
18:1:24:1	0.874	0.711	0.347	0.921	0.703	0.721	0.545	0.444	0.499	0.327	-0.030	0.211	0.276	0.363	0.258	0.325	0.306	0.262	0.260	0.216	0.259	-0.021	0.308	0.179	0.284	0.096	0.070	0.321	0.322	0.194	0.034	0.518	
18:1:24:0	0.602	0.926	0.658	0.589	0.899	0.663	0.724	0.551	0.529	0.407	0.018	0.394	0.302	0.503	0.372	0.603	0.332	0.582	0.551	0.167	0.342	0.334	0.476	0.532	0.429	0.222	0.448	0.218	0.450	0.416	0.413	0.605	
18:0:24:0	0.316	0.723	0.961	0.286	0.788	0.509	0.654	0.394	0.600	0.262	0.131	0.576	0.323	0.457	0.431	0.853	0.454	0.765	0.867	-0.032	0.448	0.588	0.715	0.834	0.516	0.418	0.681	-0.037	0.501	0.527	0.555	0.372	
SM18:1:14:0	0.166	-0.013	-0.078	0.097	0.215	0.151	0.265	0.187	0.526	0.150	-0.034	0.333	0.696	0.052	0.734	0.173	0.611	0.350	0.059	0.079	0.693	0.024	0.422	0.197	0.648	0.512	0.414	0.188	0.662	0.636	0.472	0.106	
Glc18:1:16:0	-0.010	-0.287	-0.528	-0.066	-0.236	0.023	-0.015	0.162	-0.305	0.320	0.077	-0.258	-0.006	0.225	-0.060	-0.538	-0.107	-0.398	-0.534	0.108	0.015	0.126	-0.320	-0.437	-0.172	-0.128	-0.248	-0.084	-0.132	-0.093	-0.141	-0.132	
SM18:1:16:0	0.218	-0.008	-0.239	0.133	0.169	0.209	0.266	0.202	0.402	0.351	0.056	0.242	0.610	0.153	0.632	-0.015	0.510	0.199	-0.126	0.043	0.613	0.023	0.246	0.017	0.507	0.384	0.257	0.073	0.550	0.526	0.361	0.079	
SM18:1:18:0	0.359	0.493	0.450	0.284	0.548	0.327	0.420	0.235	0.787	0.532	0																						

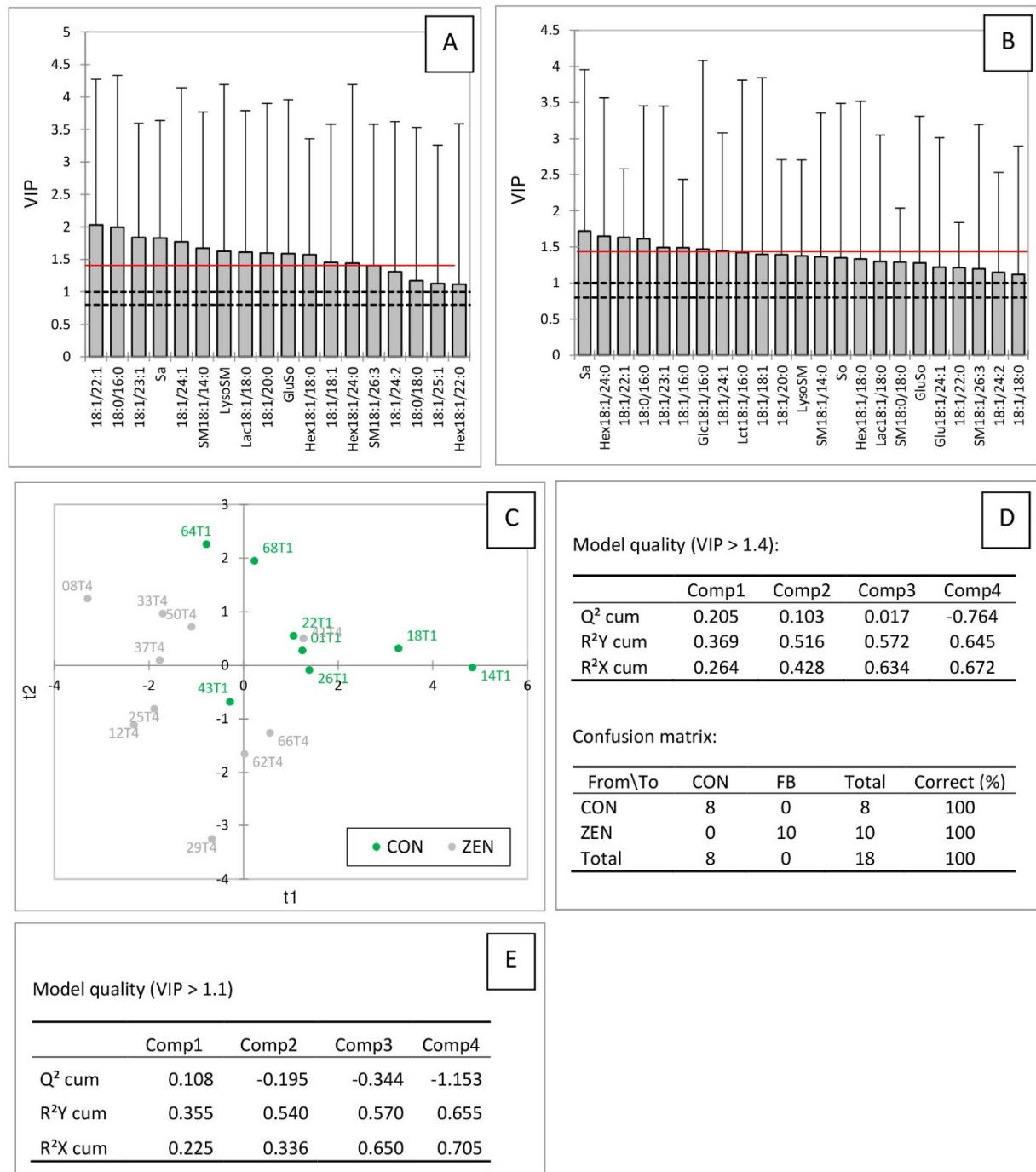


Figure S1. Partial least squares discriminant analysis (PLS-DA) of sphingolipids measured in the livers of turkeys fed a control diet (CON, T1) free of mycotoxins and a diet containing zearalenone (ZEN, T4) at a concentration of 0.47 mg/kg. Scores of the variables that are important in the projection (VIP) of the first (A) and the second (B) components. C: Discrimination of the factor axes extracted from the original explanatory variables. D: Quality of the model and confusion matrix for the training sample (variable groups) using VIP with a score > 1.4. E: Quality of the model for the training sample (variable groups) using VIP with a score > 1.1.

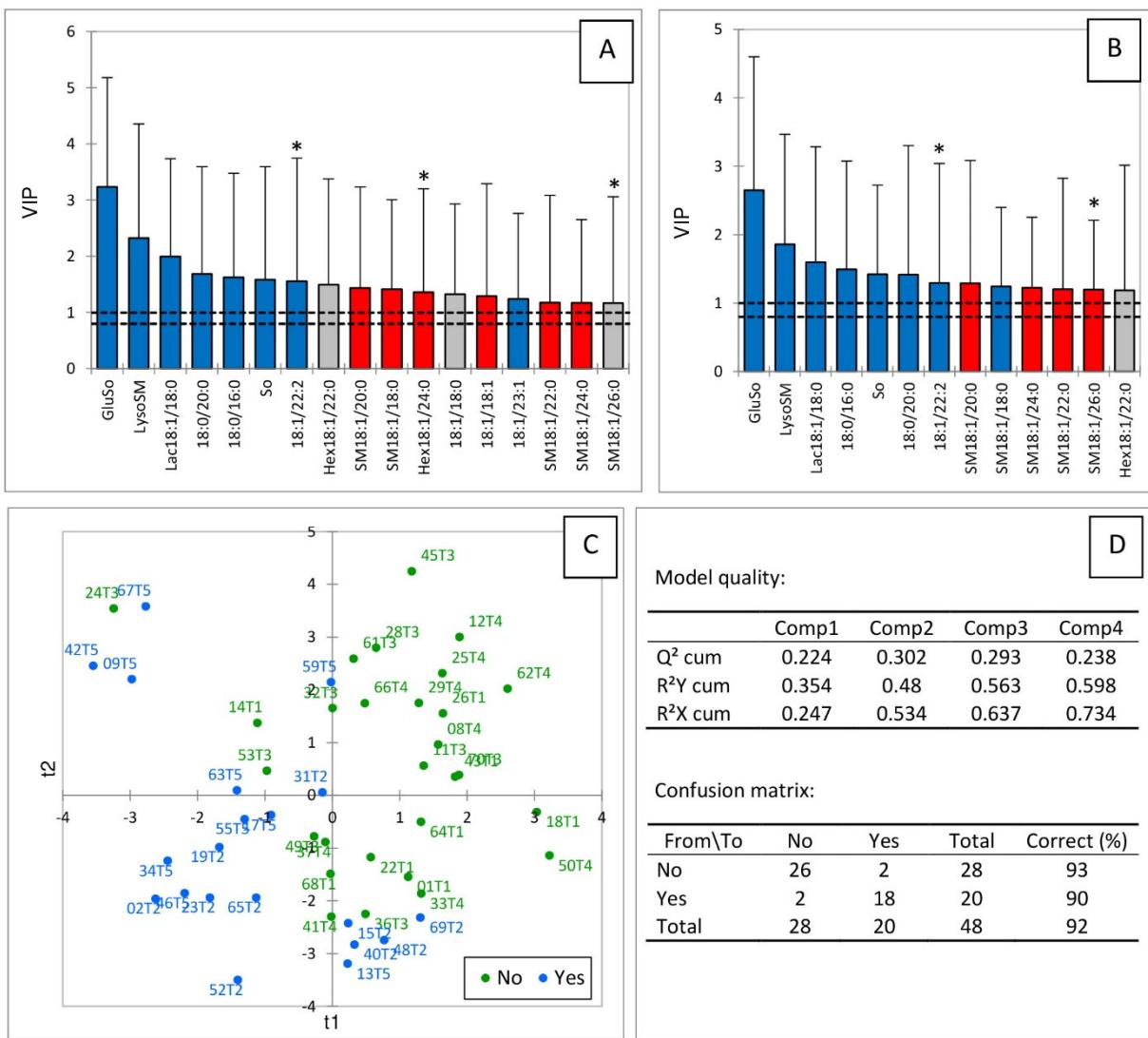


Figure S2. Partial least squares discriminant analysis (PLS-DA) of sphingolipids measured in the livers of turkeys fed 5 experimental diets according to the presence (Yes) or the absence (No) of deoxynivalenol in the diets. The 5 experimental diets corresponded to a control diet (CON, T1) free of mycotoxins, a diet containing fumonisins (FB, T3) at a concentration of 20.2 mg FB1+FB2/kg, a diet containing deoxynivalenol (DON, T2) at a concentration of 5.12 mg/kg, a diet containing zearalenone (ZEN, T4) at a concentration of 0.47 mg/kg, and a diet containing a combination of fumonisins, deoxynivalenol and zearalenone (FDZ, T5) at concentrations of respectively, 25.7, 5.15 and 0.57 mg/kg feed. Scores of the variables that are important in the projection (VIP) of the first (A) and the second (B) components. C: Discrimination of the factor axes extracted from the original explanatory variables. D: Quality of the model and confusion matrix for the training sample (variable groups). * 18:1/22 has a VIP score of 0.933 for the second component in PLS-DA analysis of sphingolipids obtained from chickens fed the DON and the CON diets. Hex18:1/24:0 and SM18:1/26:0 have VIP scores of 0.907 for the first component in PLS-DA analysis of sphingolipids obtained from chickens fed the FB and the CON diets.

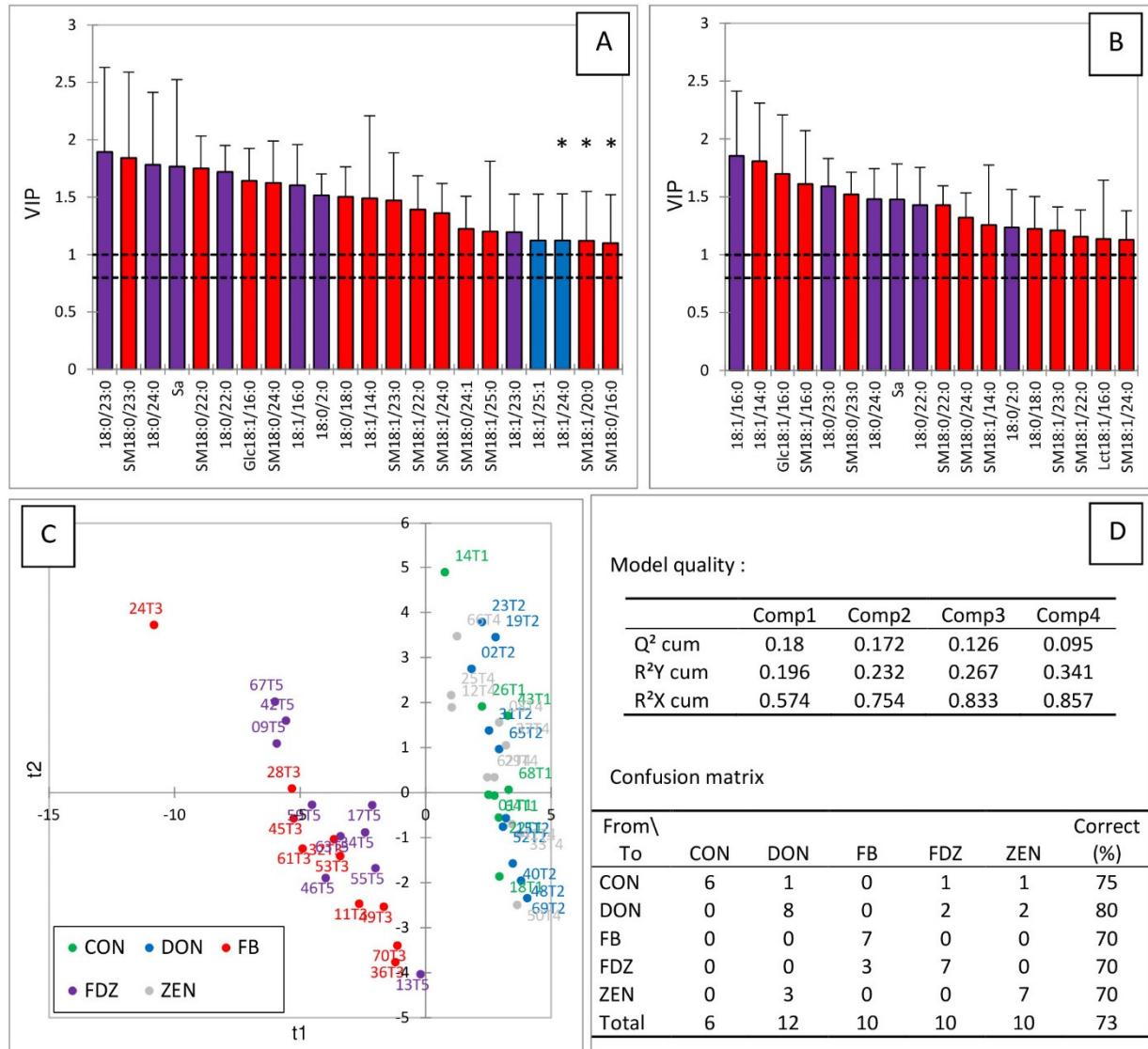


Figure S3. Partial least squares discriminant analysis (PLS-DA) of sphingolipids measured in the livers of turkeys fed 5 experimental diets corresponding to a control diet (CON, T1) free of mycotoxins, a diet containing fumonisins (FB, T3) at a concentration of 20.2 mg FB1+FB2/kg, a diet containing deoxynivalenol (DON, T2) at a concentration of 5.12 mg/kg, a diet containing zearalenone (ZEN, T4) at a concentration of 0.47 mg/kg, and a diet containing fumonisins, deoxynivalenol and zearalenone in combination (FDZ, T5) at the respective concentrations of 25.7, 5.15 and 0.57 mg/kg feed. Scores of the variables that are important in the projection (VIP) of the first (A) and the second (B) components. C: Discrimination on the factor axes extracted from the original explanatory variables. D: Quality of the model and confusion matrix of the training sample (variable groups). * 18:1/24:0 has a VIP score of 0.99 for the second component in PLS-DA analysis of sphingolipids obtained from chickens fed the DON and the CON diets. SM18:0/16:0 and SM18:1/20:0 have VIP scores of 1.037 and 1.068, respectively, for the first component in PLS-DA analysis of sphingolipids obtained from chickens fed the FB and the CON diets.