Supplementary Materials

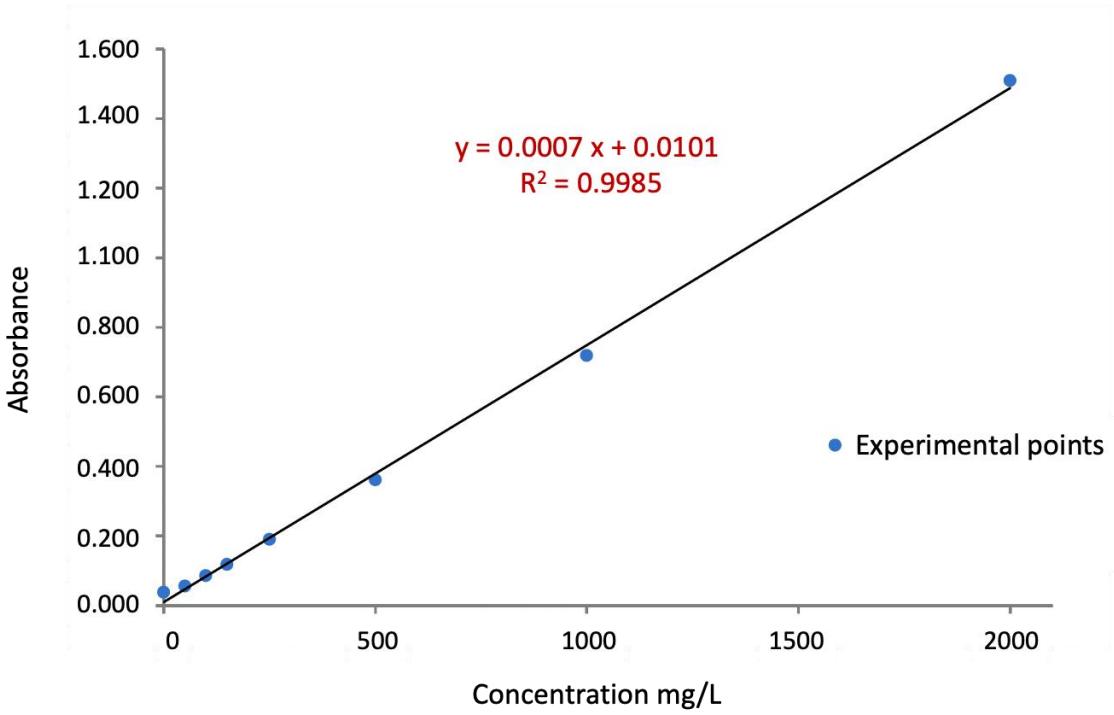


Figure S1. Gallic acid standard curve Folin-Ciocalteu method (λ= 765 nm).

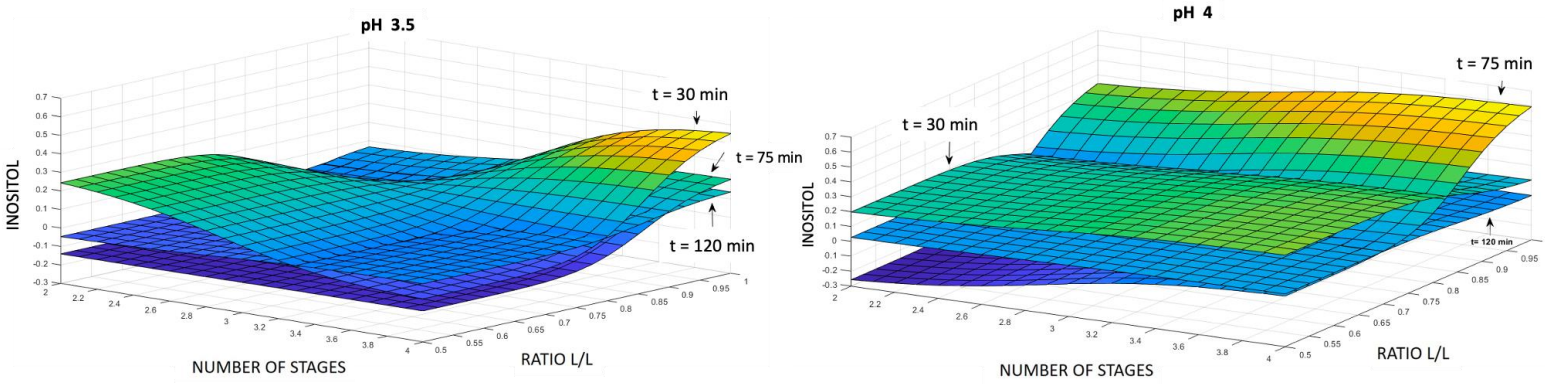


Figure S2. Surface plot of inositol extractions at pH of 3.5 (left) and 4 (right) as a function of the studied variables.

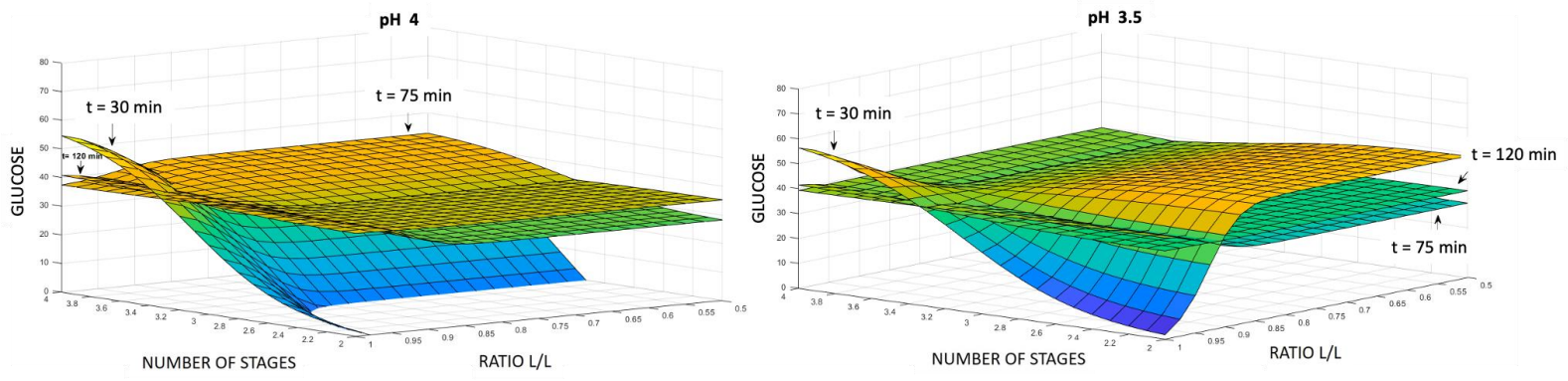


Figure S3. Surface plot of glucose extractions at pH of 4 (left) and 3.5 (right) as a function of the studied variables.

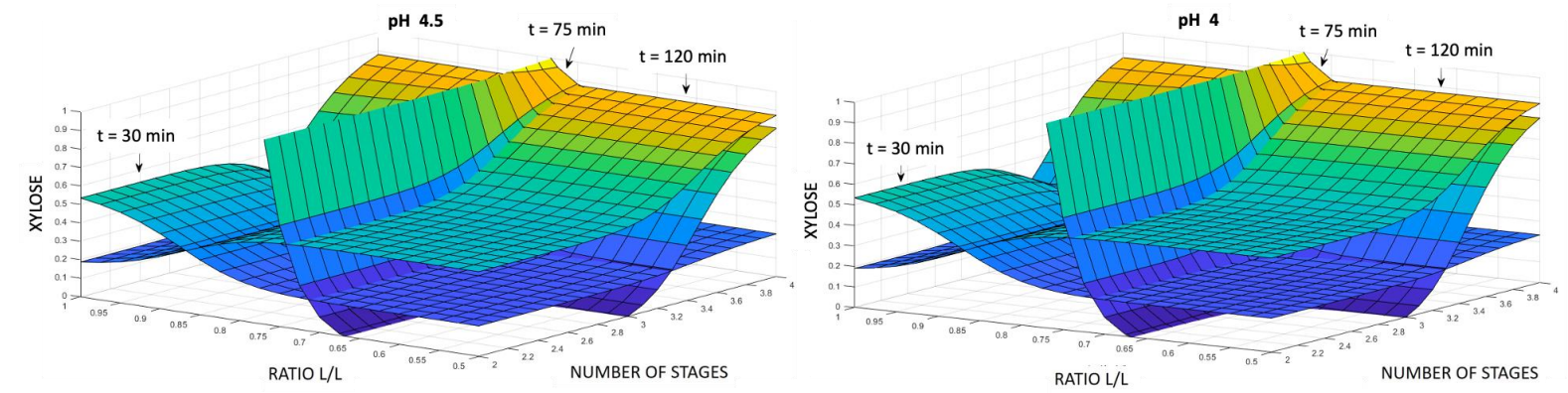


Figure S4. Surface plot of xylose extractions at pH of 4.5 (left) and 4 (right) as a function of the studied variables.

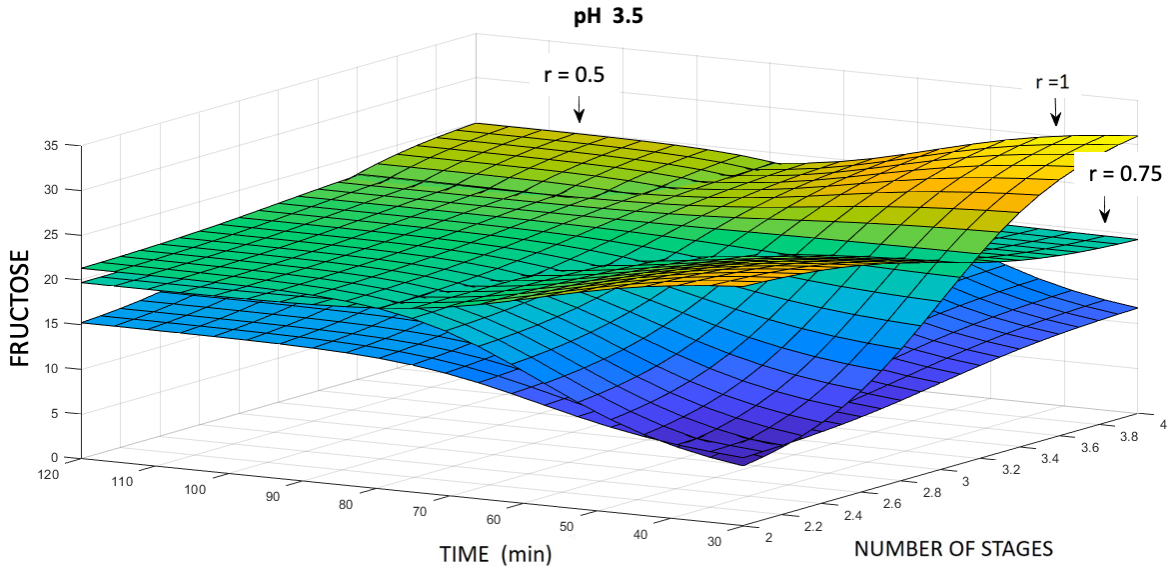


Figure S5. Surface plot of fructose extractions at pH of 3.5 as a function of the studied variables.

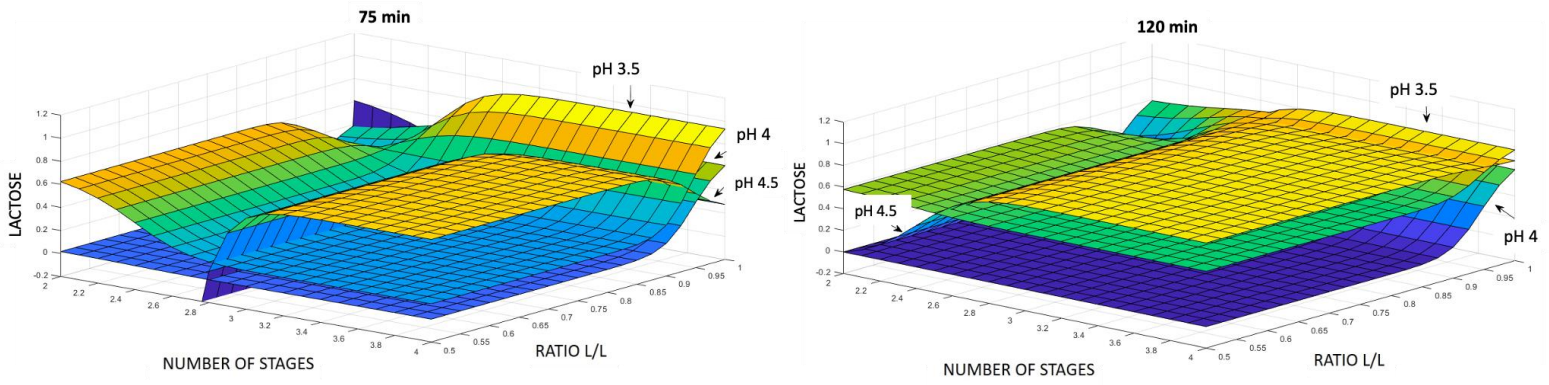


Figure S6. Surface plot of lactose extractions for 75 min (left) and 120 min (right) as a function of the studied variables.

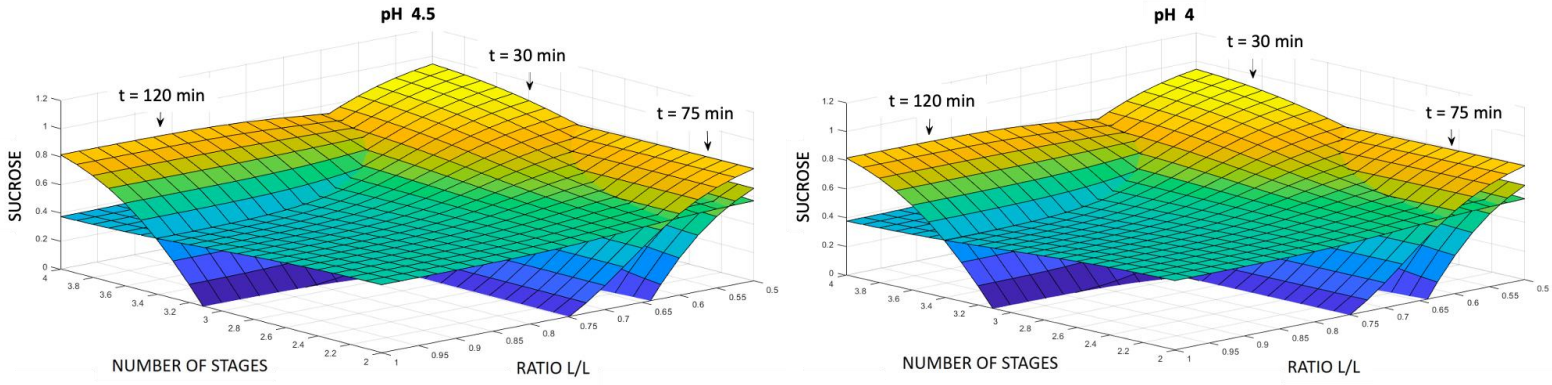


Figure S7. Surface plot of sucrose extractions at pH of 4.5 (left) and 4 (right) as a function of the studied variables.

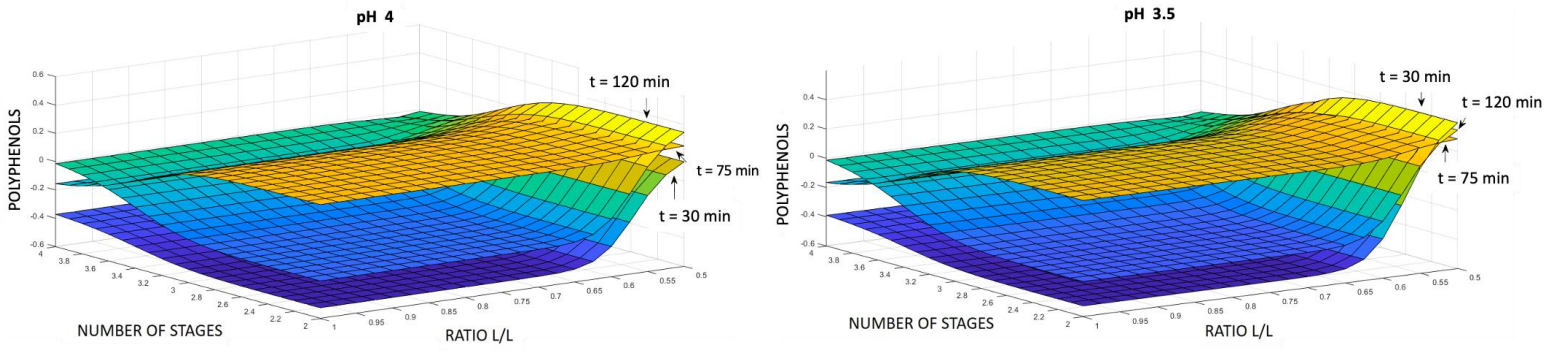


Figure S8. Surface plot of polyphenols extractions at pH of 4 (left) and 3.5 (right) as a function of the studied variables.

Table S1. Experimental results for the optimization of the xylose extraction process, parameters, constants, and the ANFIS model fit.

Exp.	Xylose mg/L	Relative increase	Estimation ANFIS	% Error	Exp.	Xylose mg/L	Relative increase	Estimation ANFIS	% Error
1	205.4	0.53	0.53	0.03	16	222.1	0.58	0.55	5.42
2	190.4	0.49	0.49	0.05	18	335.9	0.87	0.87	0.04
3	60.94	0.16	0.18	14.73	19	336.4	0.87	0.87	0.04
4	89.53	0.23	0.23	0.64	20	184.3	0.48	0.47	1.19
5	313.5	0.82	0.81	0.10	21	174.9	0.45	0.46	1.04
6	115.1	0.30	0.30	0.63	22	154.7	0.40	0.40	0.19
7	0.00	0.00	0.00	-	23	100.6	0.26	0.26	0.23
8	72.18	0.19	0.17	11.50	24	338.2	0.88	0.88	0.04
9	124.5	0.32	0.32	0.13	25	72.26	0.19	0.19	0.05
12	0.00	0.00	0.00	-	26	384.6	1.00	1.00	0.02
13	0.00	0.00	0.00	-	10* 17* 27*	181.1	0.47	0.57	19.98
15	339.4	0.88	0.88	0.35					

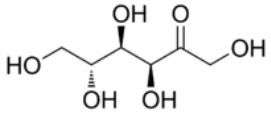
Constants				Variables		Value L	Molecule
a1	0.385	a13	0.15		30	19.1097	
a2	0.182	a14	21.138	t (min)	75	19.1097	
a3	1.049	a15	0.011		120	19.1097	
a4	0.195	a16	1.191		0.5	0.2266	
a5	0.528	a17	0.428	r	1	0.1124	
a6	-0.702	a18	0.494		2	0.9211	
a7	0.258	a19	0.993	e	4	0.4746	
a8	-0.197	a20	0.928		3.5	0.176	
a9	-0.194	a21	1.308	p	4.5	0.4623	
a10	-0.095	a22	-1.159	Coefficient of determination R^2			
a11	0.116	a23	-0.112	0.993			
a12	0.966	a24	0.967				

*central points

Table S2. Experimental results for the optimization of the fructose extraction process, parameters, constants, and the ANFIS model fit.

Exp.	Fructose mg/L	Relative value	Estimation ANFIS	% Error	Exp.	Fructose mg/L	Relative value	Estimation ANFIS	% Error
1	1590	7.56	7.57	0.02	15	4499	23.23	23.18	0.20
2	1433	6.72	6.73	0.18	16	3118	15.79	15.74	0.35
3	1870	9.07	9.09	0.24	18	4196	21.60	21.58	0.10
4	5614	29.24	29.25	0.06	19	3897	19.99	19.94	0.23
5	3795	19.44	19.43	0.04	20	4033	20.72	20.93	1.03
6	5942	31.00	31.02	0.06	21	4111	21.14	21.12	0.12
7	4280	22.05	22.05	0.02	22	3853	19.75	19.70	0.24
8	933.4	4.03	4.00	0.56	23	4485	23.15	23.23	0.34
9	5162	26.80	26.81	0.03	24	3863	19.81	19.85	0.23
11	4001	20.55	20.71	0.80	25	4265	21.97	22.02	0.22

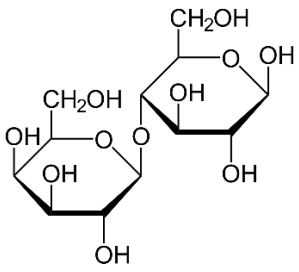
12	3612	18.45	18.73	1.51	26	4128	21.23	21.31	0.39
13	3776	19.33	19.49	0.81	10* 17* 27*	3903	20.02	19.42	2.99
14	4181	21.52	21.23	1.31					

Constants				Variables		Value L	Molecule
a1	28.639	a13	19.682	t (min)	30	24.1904	
a2	-50.561	a14	21.163		120	41.2922	
a3	18.877	a15	19.943		0.5	0.0842	
a4	34.156	a16	21.654	r	0.75	0.0588	
a5	6.628	a17	14.117		1	0.113	
a6	5.095	a18	19.898	e	2	0.8075	
a7	7.989	a19	25.602		4	0.7942	
a8	5.797	a20	25.792	p	3.5	0.3775	
a9	3.728	a21	21.23		4.5	0.3444	
a10	5.075	a22	22.141	Coefficient of determination R^2			
a11	33.322	a23	23.341	0.999			
a12	22.717	a24	19.621				

*Central points

Table S3. Experimental results for the optimization of the lactose extraction process, parameters, constants, and the ANFIS model fit.

Exp.	Lactose mg/L	Relative increase	Estimation ANFIS	% Error	Exp.	Lactose mg/L	Relative increase	Estimation ANFIS	% Error
1	98.5	0.60	0.62	4.08	15	0.00	0.00	0.00	-
2	0.00	0.00	0.00	-	16	0.00	0.00	0.02	-
4	106	0.65	0.63	1.93	18	128	0.78	0.77	0.63
5	0.00	0.00	-0.14	-	19	101	0.61	0.51	16.8
6	165	1.00	1.01	1.01	20	0.00	0.00	0.00	-
7	0.00	0.00	-0.04	-	21	0.00	0.00	0.00	-
8	0.00	0.00	0.03	-	22	95.1	0.58	0.58	0.12
9	108	0.65	0.66	0.30	23	136	0.82	0.82	0.07
11	100	0.61	0.59	3.28	24	119	0.72	0.72	0.06
12	0.00	0.00	0.14	-	25	96.6	0.59	0.59	0.09
13	0.00	0.00	0.00	-	26	0.00	0.00	0.00	-
14	102	0.62	0.61	0.67	10* 17* 27*	0.00	0.00	0.00	-

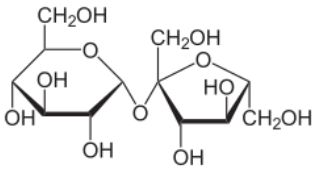
Constants				Variables		Value L	Molecule
a1	0.731	a13	0.616	t (min)	30	38.2268	
a2	1.728	a14	-0.141		120	38.2121	
a3	-28.766	a15	1.665	r	0.5	0.2294	
a4	-0.15	a16	0.588		1	0.0676	
a5	-0.031	a17	-0.087	e	2	0.3829	
a6	0.668	a18	0.828		4	0.9221	
a7	-0.419	a19	-0.305	p	3.5	0.2123	
a8	0.391	a20	0.005		4	0.2086	
a9	7.393	a21	0.343		4.5	0.2119	

a10	1.303	a22	0.874	**Coefficient of determination R²**	
a11	0.754	a23	0.785	0.983	
a12	-0.255	a24	0.767		

*Central points

Table S4. Experimental results for the optimization of the sucrose extraction process, parameters, constants, and the ANFIS model fit.

Exp.	Sucrose mg/L	Relative increase	Estimation ANFIS	% Error	Exp.	Sucrose mg/L	Relative increase	Estimation ANFIS	% Error
1	120.2	0.49	0.49	0.18	15	0.00	0.00	0.00	-
2	82.23	0.33	0.33	0.12	16	0.00	0.00	0.00	-
3	121.7	0.49	0.49	0.24	18	171.4	0.69	0.69	0.10
4	234.1	0.95	0.95	0.05	19	81.99	0.33	0.33	0.19
5	183.0	0.74	0.74	0.03	20	0.00	0.00	0.00	-
6	198.8	0.80	0.80	0.06	21	162.3	0.66	0.66	0.08
7	92.71	0.37	0.37	0.21	22	180.3	0.73	0.73	0.05
8	139.5	0.56	0.56	0.01	23	247.2	1.00	1.00	0.01
9	0.00	0.00	0.00	-	24	201.3	0.81	1.00	22.68
11	0.00	0.00	-0.01	-	26	149.6	0.61	0.61	0.00
12	227.5	0.92	0.92	0.08	10* 17* 27*	0.00	0.00	0.00	-
13	193.0	0.78	0.78	0.06					

Constants				Variables			Molecule
a1	-0.227	a13	1.279	t (min)	30	19.1097	
a2	0.525	a14	-0.176		75	19.1097	
a3	0.769	a15	1.037		120	19.1097	
a4	1.057	a16	-0.308	r	0.5	0.1481	
a5	0.208	a17	0.786		1	0.2294	
a6	0.534	a18	0.89	e	2	0.8523	
a7	0.888	a19	0.13		4	0.8462	
a8	0.408	a20	0.649	p	3.5	0.1914	
a9	0.297	a21	0.856		4.5	0.4625	
a10	0.949	a22	-1.338	**Coefficient of determination R²**			
a11	0.313	a23	1.024	0.989			
a12	0.892	a24	1.027				

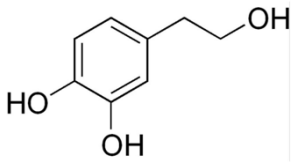
*Central points

Table S5. Experimental results for the optimization of the polyphenols extraction process, parameters, constants, and the ANFIS model fit.

Exp.	Polyphenol mg/L	Relative value	Estimation ANFIS	% Error	Exp.	Polyphenol mg/L	Relativ e value	Estimation ANFIS	% Error
1	2785	-0.49	-0.49	0.16	15	4628	-0.15	-0.16	1.12
2	2735	-0.50	-0.53	5.11	16	6649	0.22	0.20	5.07
3	2535	-0.54	-0.51	5.73	18	4756	-0.13	-0.13	0.10
4	2656	-0.51	-0.51	0.49	19	5299	-0.03	-0.03	1.07
5	4164	-0.24	-0.24	0.10	20	3842	-0.30	-0.30	0.70

6	3356	-0.39	-0.39	0.89	21	7521	0.37	0.37	0.03
7	5635	0.03	0.03	0.57	22	7356	0.34	0.34	0.06
8	6199	0.13	0.14	3.70	23	5399	-0.01	-0.01	1.86
9	7635	0.40	0.40	0.13	24	5371	-0.02	-0.02	0.98
11	7578	0.39	0.39	0.11	25	6849	0.25	0.25	0.04
12	6249	0.14	0.15	6.31	26	3506	-0.36	-0.36	0.24
13	6664	0.22	0.22	0.02	10* 17* 27*	6799	0.24	0.16	33.62
14	6342	0.16	0.16	1.20					

Constants				Variables		Value L	Molecule
a1	0.55	a13	0.28		30	19.1097	
a2	-7.835	a14	0.531	t (min)	75	19.1097	
a3	-0.0332	a15	-0.218		120	19.1097	
a4	0.242	a16	0.061	r	0.5	0.0693	
a5	-0.576	a17	0.462		1	0.2178	
a6	-0.551	a18	0.438	e	2	0.9186	
a7	-0.382	a19	-0.102		4	0.5335	
a8	0.166	a20	-0.248	p	3.5	0.4552	
a9	0.272	a21	-0.4		4.5	0.2287	
a10	-0.454	a22	0.321	**Coefficient of determination R^2**			
a11	-0.002	a23	0.047	0.999			
a12	0.0006	a24	-0.072				



*Central points

An example of the Neuro-fuzzy model designed for INOSITOL.

```
function y=INOSITOL3222(t,r,e,p)
a1=0.309;
a2=0.210;
a3=-0.139;
a4=0.409;
a5=-0.311;
a6=-0.071;
a7=0.665;
a8=-0.003;
a9=-0.164;
a10=-0.326;
a11=-0.160;
a12=0.131;
a13=-0.032;
a14=-0.013;
a15=0.040;
a16=0.039;
a17=-0.058;
a18=0.062;
a19=0.023;
a20=0.059;
a21=0.056;
```

```
a22=0.074;
a23=0.194;
a24=-0.047;
c11=29.999;
an11=19.109;
c12=75;
an12=19.109;
c13=120;
an13=19.109;
c21=0.528;
an21=0.231;
c22=1.056;
an22=0.133;
c31=1.955;
an31=0.806;
c32=3.962;
an32=0.878;
c41=3.394;
an41=0.274;
c42=4.446;
an42=0.459;
f11=exp(-.5*((t-c11)./an11).^2);
f12=exp(-.5*((t-c12)./an12).^2);
f13=exp(-.5*((t-c13)./an13).^2);
f21=exp(-.5*((r-c21)./an21).^2);
f22=exp(-.5*((r-c22)./an22).^2);
f31=exp(-.5*((e-c31)./an31).^2);
f32=exp(-.5*((e-c32)./an32).^2);
f41=exp(-.5*((p-c41)./an41).^2);
f42=exp(-.5*((p-c42)./an42).^2);
y=(a1.*f11.*f21.*f31.*f41+a2.*f11.*f21.*f31.*f42+a3.*f11.*f21.*f32.*f41+a4.*f11.*f21.*f32.*f42+a5.*f11.
*f22.*f31.*f41+a6.*f11.*f22.*f31.*f42+a7.*f11.*f22.*f32.*f41+a8.*f11.*f22.*f32.*f42+a9.*f12.*f21.*f31.*f
41+a10.*f12.*f21.*f31.*f42+a11.*f12.*f21.*f32.*f41+a12.*f12.*f21.*f32.*f42+a13.*f12.*f22.*f31.*f41+a1
4.*f12.*f22.*f31.*f42+a15.*f12.*f22.*f32.*f41+a16.*f12.*f22.*f32.*f42+a17.*f13.*f21.*f31.*f41+a18.*f13.
*f21.*f31.*f42+a19.*f13.*f21.*f32.*f41+a20.*f13.*f21.*f32.*f42+a21.*f13.*f22.*f31.*f41+a22.*f13.*f22.*f
31.*f42+a23.*f13.*f22.*f32.*f41+a24.*f13.*f22.*f32.*f42)./(f11.*f21.*f31.*f41+f11.*f21.*f31.*f42+f11.*f2
1.*f32.*f41+f11.*f21.*f32.*f42+f11.*f22.*f31.*f41+f11.*f22.*f31.*f42+f11.*f22.*f32.*f41+f11.*f22.*f32.*f
42+f12.*f21.*f31.*f41+f12.*f21.*f31.*f42+f12.*f21.*f32.*f41+f12.*f21.*f32.*f42+f12.*f22.*f31.*f41+f12.*
f22.*f31.*f42+f12.*f22.*f32.*f41+f12.*f22.*f32.*f42+f13.*f21.*f31.*f41+f13.*f21.*f31.*f42+f13.*f21.*f32.
*f41+f13.*f21.*f32.*f42+f13.*f22.*f31.*f41+f13.*f22.*f31.*f42+f13.*f22.*f32.*f41+f13.*f22.*f32.*f42);
end
```