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Supplementary material

Towards better quality criteria of European honeydew honey: phenolic profile and antioxidative capacity

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Content

Table S1. Parameters of descriptive statistics of the physicochemical parameters of the honeydew honey

Table S2. Presence of certain phenolic compounds in the honeydew honey samples.

Table S3. Kruskal Wallis test

Figure S1. Proposed fragmentation pathway of compound **37** (8-methoxy kaempferol).

Figure S2. Fragmentation pathway of compound **16** (quercetin 3-*O*-(2"-hexosyl)hexoside).

Figure S3. PCA - Variables/loadings plot of data

Table S1. Parameters of descriptive statistics of the physicochemical parameters of the honeydew honey

Botanical origin	Parameter	ω [%]	EC [mS/cm]	pH	SR [α 20]	FA [meq/kg]	LA [meq/kg]	TA [meq/kg]
<i>Abies alba</i> Mill. (n = 22)	mean	15.8	0.91	4.6	49.5	30.6	3.1	33.7
	mediana	15.8	0.91	4.7	61.5	25.5	2.0	27.3
	st dev	1.6	0.13	0.5	28.8	13.7	3.3	16.1
	range	13.3-19.7	0.69-1.11	3.7-5.3	3.1-85.5	14.3-56.8	0.2-14.7	15.8-66.8
Conifers (n = 17)	mean	16.2	0.97	4.5	32.6	31.7	2.6	34.4
	mediana	16.8	0.98	4.5	24.47	24.7	1.5	26.2
	st dev	1.7	0.18	0.4	30.4	15.9	2.8	18.3
	range	13.1-19.3	0.72-1.25	3.7-5.1	0.6-84.3	18.5-64.8	1.0-9.6	20.1-70.3
<i>Quercus ilex</i> L. (n = 15)	mean	15.0	1.29	4.7	24.6	35.4	2.3	37.8
	mediana	14.7	1.32	4.7	8.0	33.4	2.0	36.5
	st dev	1.3	0.15	0.4	31.5	9.7	1.9	10.5
	range	13.2-17.8	1.01-1.47	3.9-5.2	1.7-97.2	26.5-66.4	0.5-7.1	27.5-70.9
<i>Quercus frainetto</i> Ten. (n = 4)	mean	14.9	1.13	4.1	61.4	78.6	16.5	95.1
	mediana	14.9	1.13	4.1	81.8	78.6	16.5	95.1
	st dev	1.2	0.14	0.4	53.5	30.9	14.1	44.9
	range	14.0-15.7	1.03-1.23	3.8-4.3	0.7-101.8	56.8-100.3	6.6-26.4	63.4-126.8
<i>Acer monspessulanum</i> L. (n = 6)	mean	15.0	0.99	4.4	55.4	40.0	5.4	45.4
	mediana	14.9	1.02	4.3	66.1	37.7	5.8	43.5
	st dev	0.7	0.25	0.4	31.3	18.4	3.8	22.0
	range	14.3-16.1	0.73-1.30	3.7-4.9	7.1-90.3	22.3-61.6	1.0-9.1	24.3-70.2

Table S2. Presence of certain phenolic compounds in the honeydew honey samples

Peak No	t _R , min	Compound name	Botanical origin of honeydew honey ^b				
			Conifers	Silver fir	Evergreen oak	Hungarian oak	Montpellier maple
1	4.20	Dihydroxybenzoic acid hexoside	+	+	+	+	+
2	4.44	Protocatechuic acid ^a	+	+	+	+	+
3	4.51	Hydroxybenzoic acid hexoside I	+	+	+	+	+
4	4.74	Caffeic acid hexoside I	+	+	+	+	+
5	4.91	Aesculetin 6- <i>O</i> -glucoside (Aesculin) ^a	+	+	+	+	+
6	4.92	Hydroxybenzoic acid hexoside II	+	+	+	+	+
7	5.10	Caffeic acid hexoside II	+	+	+	+	+
8	5.26	5- <i>O</i> -Caffeoylquinic acid ^a	+	+	+	+	+
9	5.41	<i>p</i> -Hydroxybenzoic acid ^a	+	+	+	+	+
10	5.48	Gentisic acid ^a	+	+	+	+	+
11	5.62	<i>p</i> -Hydroxyphenylacetic acid ^a	+	+	+	+	+
12	5.63	Vanillic acid ^a	+	+	+	+	+
13	5.77	Aesculetin ^a	+	+	+	+	+
14	5.80	Caffeic acid ^a	+	+	+	+	+
15	5.83	Quercetin 3- <i>O</i> -(2"-hexosyl)hexoside	-	-	+	-	+
16	6.13	Methoxy kaempferol 3- <i>O</i> -(2"-hexosyl)hexoside	+	+	+	+	+
17	6.39	Kaempferol 7- <i>O</i> -(6"-hexosyl)hexoside	+	+	+	+	+
18	6.44	Quercetin 3- <i>O</i> -(6"-rhamnosyl)glucoside (Rutin) ^a	+	+	+	+	+
19	6.45	Kaempferol 3- <i>O</i> -(2"-rhamnosyl)hexoside	+	+	+	-	+
20	6.68	<i>p</i> -Coumaric acid ^a	+	+	+	+	+
21	6.71	Quercetin 3- <i>O</i> -glucoside ^a	+	+	+	+	+
22	7.02	Sinapic acid ^a	+	+	+	+	+
23	7.03	Naringenin 7- <i>O</i> -(2"-rhamnosyl)glucoside (Naringin) ^a	+	+	+	+	+
24	7.04	Ferulic acid ^a	+	+	+	+	+
25	7.17	Quercetin 3- <i>O</i> -rhamnoside ^a	+	+	+	+	+
26	7.90	Coniferyl aldehyde ^a	+	+	+	+	+
27	7.98	Luteolin 7- <i>O</i> -rhamnoside	-	-	+	-	-
28	8.24	Quercetin ^a	+	-	+	+	+
29	8.40	Kaempferol 7- <i>O</i> -rhamnoside	-	-	+	-	-
30	8.59	Eriodictyol ^a	+	+	+	+	+
31	8.69	Luteolin ^a	+	+	+	+	+

32	9.33	Tectochrysin	–	–	+	–	–
33	9.44	Naringenin ^a	+	+	+	+	+
34	9.52	Apigenin ^a	+	+	+	+	+
35	9.53	Genistein ^a	+	+	+	+	+
36	9.66	Methoxy kaempferol	+	+	+	+	+
37	9.70	Kaempferol ^a	+	+	+	+	+
38	9.74	Pinobanksin ^a	+	+	+	+	+
39	9.87	Isorhamnetin ^a	+	+	+	+	+
40	9.94	Chrysoeriol ^a	+	+	+	+	+
41	10.19	Dimethyl quercetin	–	–	+	–	–
42	10.65	Rhamnetin	+	+	+	+	+
43	10.67	Rhamnocitrin	–	+	+	+	–
44	10.75	Genkwanin ^a	+	+	+	+	+
45	11.02	Tricin	+	+	+	+	–
46	11.30	Benzyl caffeate	–	+	+	+	–
47	11.61	Chrysin ^a	+	+	+	+	+
48	11.70	Pinocembrin ^a	+	+	+	+	+
49	11.82	Kaempferide ^a	+	+	+	+	+
50	11.84	Galangin ^a	+	+	+	+	+
51	12.20	Acacetin ^a	+	+	+	+	+
52	12.72	Pinobanksin 3- <i>O</i> -propionate	–	–	+	+	–

^a Confirmed using standards;

^b Phenolic compound was considered present in honeydew honey of particular botanical origin if it was found in more than 80% samples of that origin: "+" detected; "–" not detected.

Table S3. Kruskal Wallis test

Parameter	Kruskal Wallis	
	P	Multiple Comparison Z-value Test ^a
EC	< 0.0001	E(S,M,C) ^b
FA	0.0211	S,C(E,H)
SR	0.0233	H(C,E)
TA	0.0262	S(E,H) C(E)
TPC	< 0.0001	S,C(M,H,E)
RSA	< 0.0001	S,C(M,H,E)
CV	< 0.0001	S,C(M,H,E)
PrA	< 0.0001	S(M,H,E)
HPA	< 0.0001	S(M,H,E) C(M,H,E)
VA	0.0196	C,H(M,E)
CouA	0.0003	E(S,C,H)
FA	0.0032	E(S,C,H)
Lut	0.0434	H(M,C)
Nar	0.0024	H(S,M,E)
Que	0.0016	S(E,H)
Api	< 0.0001	S(E,C)
Gen	0.0061	S,C(M,H,E)
Kfrl	0.0027	S(E,C)

^a Regular test: Medians significantly different if z-value > 1.9600

^b S - Silver fir; M - Montpellier maple; C - Conifers; H - Hungarian oak;
E - Evergreen oak

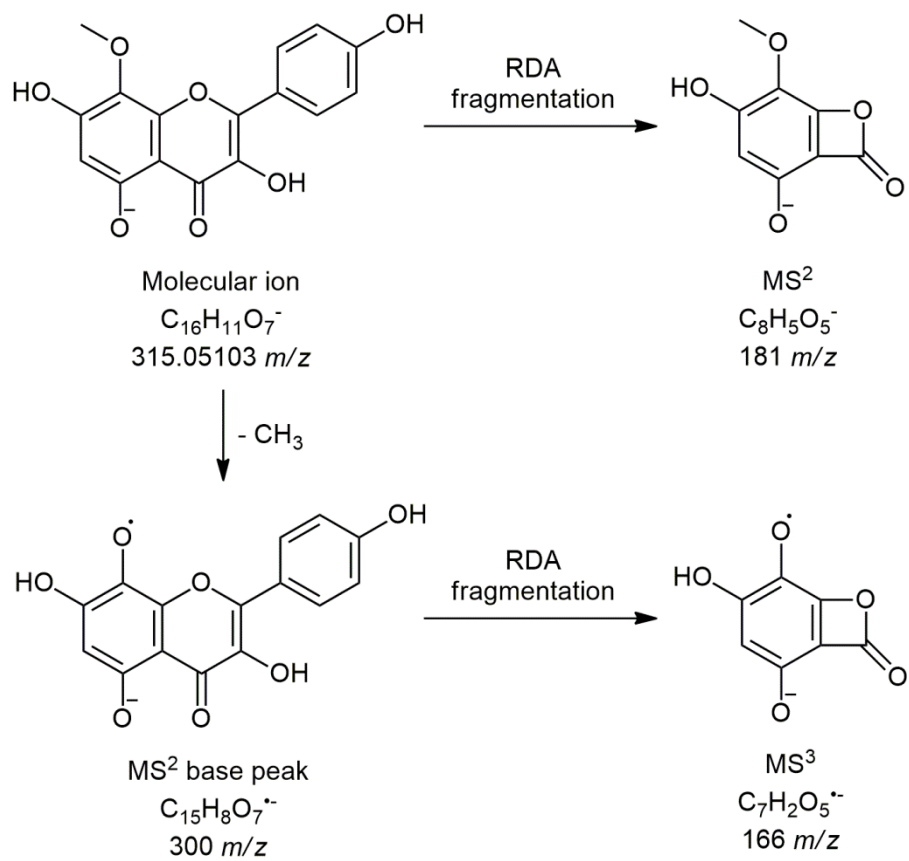


Figure S1.

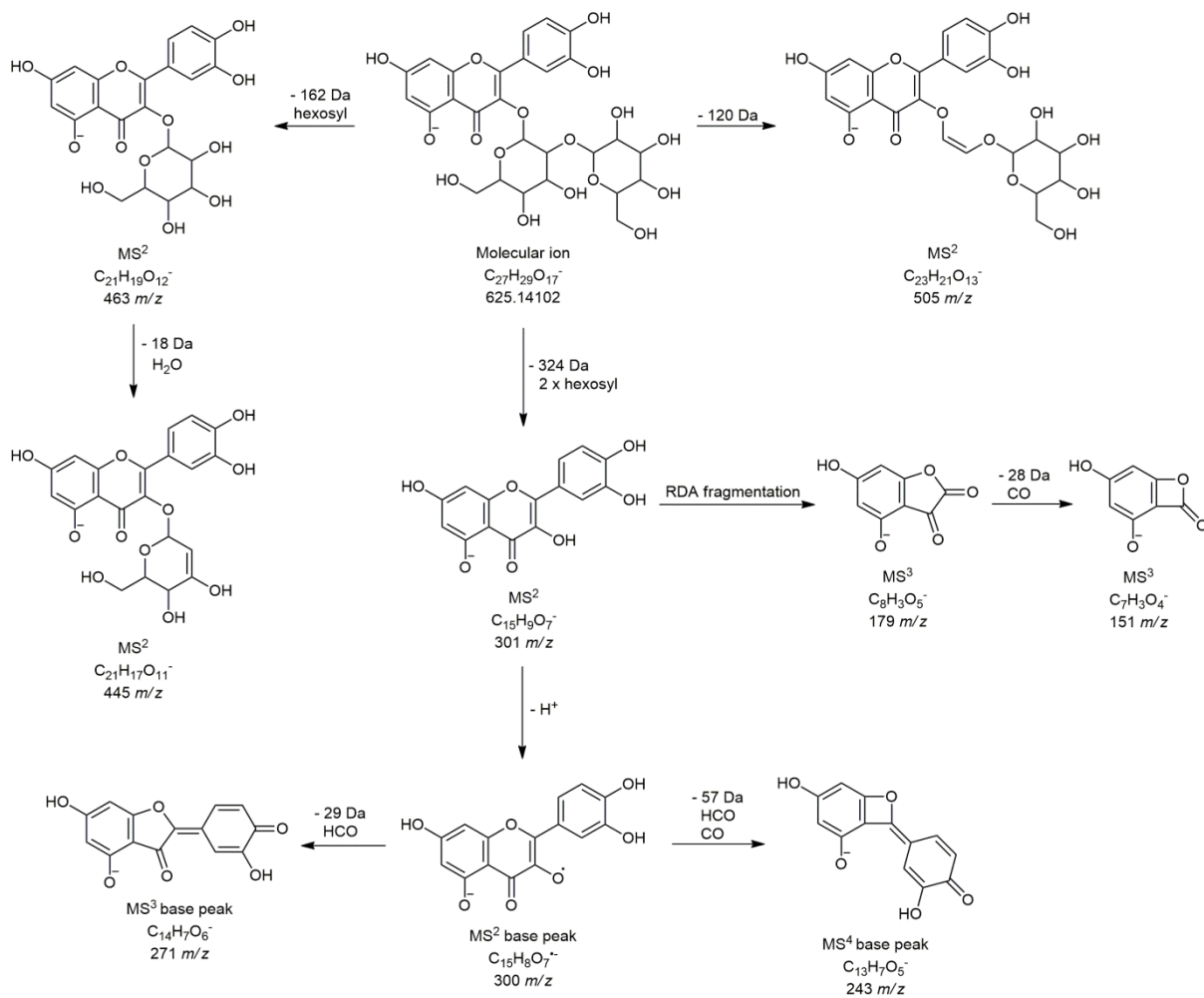


Figure S2.

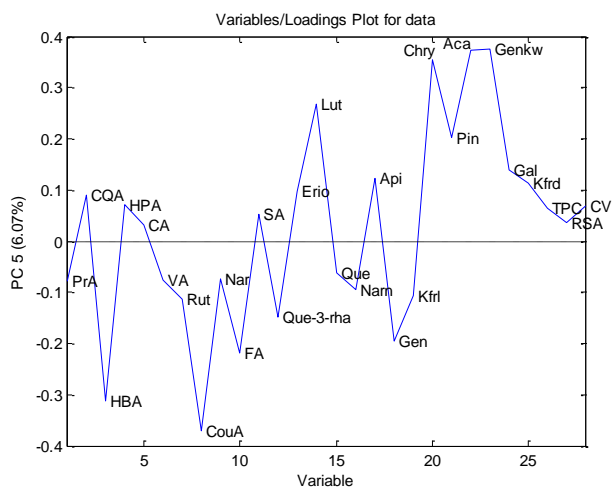
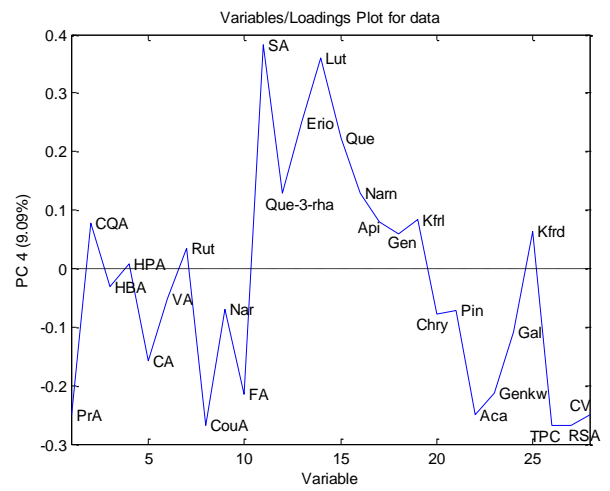
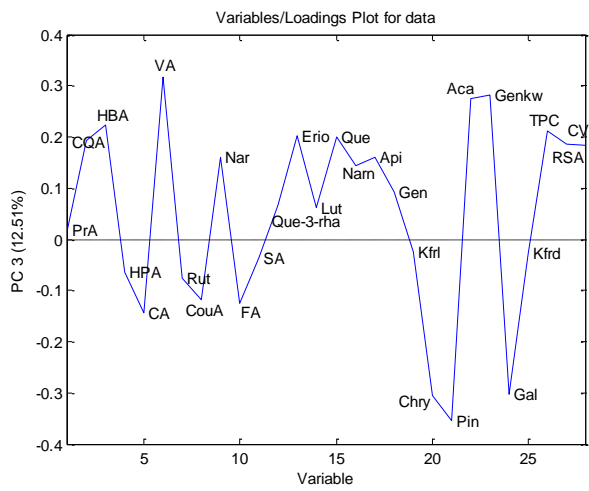
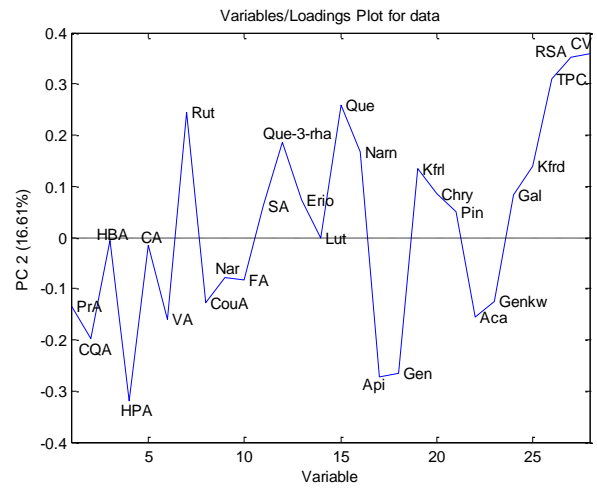
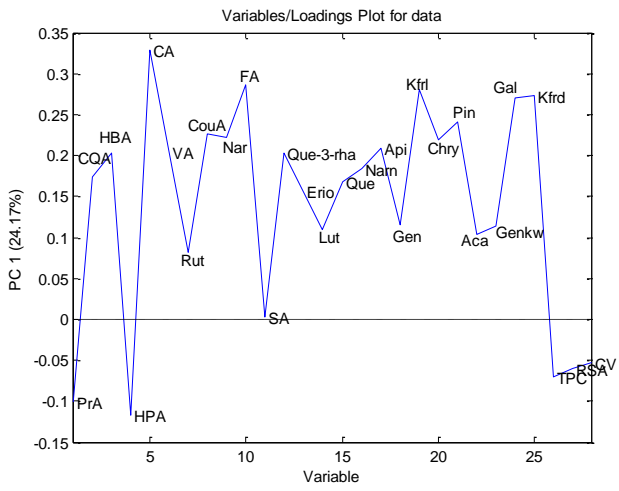


Figure S3.