

Bibliographical review of the main European unifloral honeys

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1. INTRODUCTION

The International Honey Commission of Apimondia (IHC) carried out a large work of characterization resulting in the descriptive sheets of 15 important European unifloral honey (Persano Oddo and Piro, 2004).

To compare the results obtained in IHC work with other European studies, an extensive bibliographic review was performed, collecting and tabulating the analytical data available in the literature related to the same honey types and analytical parameters reported in the descriptive sheets. Also some further unpublished data personally communicated by authors were included.

A summarising table was compiled for each of the 15 important European honey types. All data reported in the tables are generally the same as found in the original works. In some cases the original measure units were transformed to the official ones (Bogdanov et al., 1997), so that they can be compared to the data of the descriptive sheets (e.g. electrical conductivity in mS/cm, invertase in U/kg, etc.).

The complete references quoted in the review are listed in the reference list. The distribution of the studies per country is reported in Table I.

The results of the IHC study (Persano Oddo and Piro, 2004) are fairly consistent with those available in the literature. When some major differences are encountered, they are probably accounted for by the different analytical methods used.

The review provides a useful device for the knowledge and study of unifloral honeys.

2. BIBLIOGRAPHIC DATA ON EUROPEAN UNIFLORAL HONEY

Legend. Numbers in bold = average values; the sign \pm precedes standard deviation values; numbers in round brackets = min/max values; code in square brackets = source of the data (see reference list). PG = pollen grains; HDE = Honeydew elements; PE = plant elements (PG+HDE).

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Table I. References per country.

Belgium	[BRU 92]
Bulgaria	[DIN 03] [IVA 78] [IVA 97] [IVA 02]
Croatia	[MUR 76]
Czech Republic	[ČEL 01]
Denmark	[RAV 75]
France	[FAU 02] [GON 79] [GON 83] [GON 87] [ITA 75] [POU 92]
Germany	[DUS 67] [MAU 64] [VDO 96] [VOR 64]
Greece	[DRI 95] [KAR 97] [THR 95] [TSI 00] [MAN 01]
Hungary	[FOL 94] [FOL 96]
Italy	[PER 95A] [PER 95B] [PER 99] [PER 00]
Poland	[KRA 91]
Portugal	[RUS 97] [MEN 98]
Romania	[BAC 65]
Slovenia	[GOL 99] [GOL 03]
Spain	[CAB 97] [ESP 81] [JAT 95] [JUA 92] [MAT 92] [MAT 97] [MAT 98] [ORT 95] [PEZ 95A] [PEZ 95B] [PEZ 90] [PUJ 94] [SAN 01] [SAU 82A] [SAU 82B] [SER 87] [SER 88A] [SER 88B] [SER 88C] [SER 93] [SER 95] [SER 00]
Switzerland	[BOG 88] [BOG 90] [BOG 97]
Yugoslavia	[SHL 81]
Europe	[BOG 99] [STA 74]

BRASSICA

PG/10 g honey · 10 ³	>100 [STA 74]
% Specific pollen	very high [ITA 75]; (45–90) [BOG 90]; >65 [BRU 92]; >45 [PEZ 95A]; 65±27 [BOG 97]
Colour (mm Pfund)	35 [ITA 75]; 29±11 (11/41) [BRU 92]
Electrical conductivity (mS/cm)	0.14 [VOR 64]; (0.17/0.21) [DUS 67]; (0.1/0.25) [ITA 75]; (0.12/0.55) [RAV 75]; (0.16/0.58) [BOG 90]; 0.19 (0.13/0.36) [KRA 91]; 0.21±0.06 (0.10/0.33) [BRU 92]; 0.17±0.50 (0.10/0.26) [POU 92]; 0.26±0.03 [PEZ 95A]; 0.18±0.04 (0.10/0.29) [VDO 96]; 0.34±0.16 [BOG 97]; (0.09/0.27) [BOG 99]
pH	4.0 (3.8/4.3) [ITA 75]; (3.24/4.31) [RAV 75]; 4.1 (4.0/4.2) [KRA 91]; 4.1±0.2 (3.9/4.3) [BRU 92]; 4.0±0.1 (3.8/4.2) [POU 92]; 3.6 [PEZ 95A]; 3.9±0.54 [BOG 97]
Free acidity (meq/kg)	13.2 (9.3/21.2) [KRA 91]; 9.4±3.4 (5.0/15.0) [BRU 92]; 22.0±6.0 [PEZ 95A]
Lactones (meq/kg)	7.8 (4.1/14.2) [KRA 91]; 1.85±0.18 [PEZ 95A]
Total acidity (meq/kg)	21.0 (15.1/31.3) [KRA 91]; 14.9±2.9 (10.0/20.0) [POU 92]; 23.9±6.21 [PEZ 95A]
Water (g/100 g)	(17.6/18.8) [DUS 67]; (17.1/23.7) [RAV 75]; (13.8/19.1) [BOG 90]; 20.0 (17.8/21.3) [KRA 91]; 17.1±0.9 (15.6/19.9) [BRU 92]; 17.6±1.1 (16.1/0.8) [POU 92]; 18.7±0.78 [PEZ 95A]; 16.6±0.75 (14.7/18.8) [VDO 96]
Diastase (DN)	>10 [ITA 75]; 10.0 (5.0/17.9) [KRA 91]; 20.0±6.9 (11.0/26.0) [POU 92]; 46.6±4.9 [PEZ 95A]

Invertase (U/kg)	77.1 (50.7/39.7) [KRA 91]; 132.9 ±33.8 [VDO 96]
Proline (mg/kg)	233.5 (163.4/389.2) [KRA 91]
Fructose (g/100 g)	44.6* (40.5/46.3) [ITA 75]; 39.7 [MUR 76]; (36.9/40.2) [GON 79]; 36.9 (36.1/37.6) [KRA 91]; 36.7 ±3.00 (31.7/41.8) [BRU 92]; 36.7 ±1.20 (33.7/38.0) [POU 92]; 35.3 ±0.71 [PEZ 95A]; 38.2 ±1.64 (31.1/42.0) [VDO 96]; 38.1 ±1.50 [BOG 97]
Glucose (g/100 g)	48.2* (44.7/53.2) [ITA 75]; 35.1 [MUR 76]; (39.6/42.6) [GON 79]; 40.0 [GON 87]; (32.2/37.1) [BOG 90]; 39.3 (38.6/39.7) [KRA 91]; 38.9 ±2.7 (34.9/42.6) [BRU 92]; 39.7 ±1.2 (37.6/43.2) [POU 92]; 38.1 ±3.7 [PEZ 95A]; 40.2 ±2.1 (36.2/46.7) [VDO 96]; 34.5 ±1.6 [BOG 97]
Sucrose (g/100 g)	0.54* (0/1) [ITA 75]; < 1 [GON 87]; (0.1/0.2) [BOG 90]; 0.49 (0.2/0.7) [KRA 91]; 0.50 ±0.20 (0.0/0.9) [POU 92]; 0.20 ±0.30 (0.0/0.9) [BRU 92]; 0.07 ±0.03 [PEZ 95A]; 0.01 (0/0.3) [VDO 96]; 0.12 ±0.07 [BOG 97]; (0.0/1.0) [BOG 99]
F+G (g/100 g)	70.2** [MUR 76]; 76.1 (76.2/77.3) [KRA 91]; (68.2/83.9) [BOG 99]
F/G ratio	0.90 (0.76/1.0) [ITA 75]; 0.95 ±0.09 (0.75/1.16) [BRU 92]; 0.90 ±0.04 (0.87/0.99) [POU 92]; 0.93 ±0.07 [PEZ 95A]; 0.96 ±0.04 (0.86/1.02) [VDO 96]; 1.51 ±0.09 [BOG 97]
G/W ratio	2.25 (1.86/2.56) [ITA 75]
* % of dry matter ** reducing sugars	

CALLUNA

PG/10 g honey · 10 ³	(100 to 500) [SER 93]
% Specific pollen	17 (10/33) [SER 93]
Electrical conductivity (mS/cm)	(0.63/1.16) [RAV 75]; 0.50 (0.26/0.71) [KRA 91]; 0.81 ±0.16 (0.59/1.22) [SER 93]
pH	(3.95/5.00) [RAV 75]; 4.4 (3.98/4.98) [KRA 91]; 4.1 ±0.19 (3.7/4.3) [SER 93]
Free acidity (meq/kg)	22.7 (11.5/45.2) [KRA 91]; 42.3 ±6.2 (29.0/52.2) [SER 93]
Lactones (meq/kg)	7.3 (4.7/12.1) [KRA 91]; 3.3 ±2.2 (0.48/7.95) [SER 93]
Total acidity (meq/kg)	30.0 (18.2/54.5) [KRA 91]; 45.5 ±6.9 (38.9/60.1) [SER 93]
Water (g/100 g)	(19.2/24.0) [RAV 75]; 19.0 (16.4/21.6) [KRA 91]; 17.4 ±2.05 (14.4/19.8) [SER 93]
Diastase (DN)	24.4 (8.3/38.5) [KRA 91]; 51.9 ±14.7 (26.1/81.1) [SER 93]
Invertase (U/kg)	120.5 (41.9/191.7) [KRA 91]
Proline (mg/kg)	506.1 (289.4/862.3) [KRA 91]
Fructose (g/100 g)	39.5 (37.1/40.9) [KRA 91]; 43.3 ±2.0 (38.2/47.5) [SER 93]
Glucose (g/100 g)	31.9 (30.3/33.5) [KRA 91]; 31.0 ±2.13 (27/34.4) [SER 93]
Sucrose (g/100 g)	0.59 (0.33/0.86) [KRA 91]; 0.16 ±0.08 [SER 93]
F+G (g/100 g)	71.5 (67.4/73.9) [KRA 91]
F/G ratio	1.40 ±0.07 (1.29/1.51) [SER 93]
G/W ratio	1.49 ±0.23 (1.16/1.90) [SER 93]

CASTANEA

PG/10 g honey · 10 ³	>100 [PER 00]
% Specific pollen	(95/99) [BOG 90]; >70 [JAT 95]; 98±1 [BOG 97]; >90 [PER 00]
Colour (mm Pfund)	70±11 (55/83) [BRU 92]; 92±9 (62/119) [PER 95A]; 89.1±16.9 [PER 00]
Electrical Conductivity (mS/cm)	(0.58/0.74) [IVA 78]; (0.67/1.92) [BOG 90]; 0.96±0.23 (0.68/1.24) [BRU 92]; 1.24±0.09 (1.11/1.42) [PUJ 94]; (0.88/2.15) [JAT 95]; 1.41±0.24 (1.01/2.09) [PER 95A]; 1.54±0.32 (1.11/2.06) [THR 95]; 1.19 (0.85/1.50) [FOL 96]; 1.30±0.34 [BOG 97]; (0.80/2.07) [BOG 99]; 1.48±0.34 (0.98/2.03) [GOL 99]; 1.40±0.24 [PER 00]
Specific rotation [α] _D ²⁰	(-2.3/-3.5) [IVA 78]; -17.0±3.5 (-24.9/-10.0) [PER 95A]; -16.4±3.4 [PER 00]
pH	4.4±0.3 (4.2/4.8) [BRU 92]; 4.6±0.1 (4.4/4.8) [PUJ 94]; (3.7/4.8) [JAT 95]; 5.5±0.4 (4.8/6.8) [PER 95A]; 4.9±0.2 (4.6/5.4) [THR 95]; 5.4±0.5 [BOG 97]; 5.4±0.6 (4.6/6.5) [GOL 99]; 5.3±0.5 [PER 00]
Free acidity (meq/kg)	26.3±4.0 (23.0/32.0) [BRU 92]; 48.2±6.9 (31.5/56.5) [PUJ 94]; (24.4/72.8) [JAT 95]; 10.3 (9.3/11.3) [FOL 96]; 17.4±4.9 (10.3/24.8) [GOL 99]; 13.4±3.3 [PER 00]
Lactones (meq/kg)	0.01±0.03 (0/0.1) [PUJ 94]; 4.2 (1.8/6.6) [FOL 96]; 1.7±1.1 [PER 00]
Total acidity (meq/kg)	(8.5/13.0) [IVA 78]; 48.2±6.9 (31.5/56.5) [PUJ 94]; 13.8±3.8 (5.7/24.0) [PER 95A]; 14.5 (11.1/18.0) [FOL 96]; 15.1±4.0 [PER 00]
Water (g/100 g)	(17.1/19.3) [IVA 78]; (18.0/19.0) [SHL 81]; (15.6/18.7) [BOG 90]; 18.9±2.2 (16.8/22.0) [BRU 92]; 16.2±0.6 (15.6/17.8) [PUJ 94]; (16.6/19.1) [JAT 95]; 17.4±0.9 (<19) [PER 95A]; 16.3±0.71 (14.9/17.4) [THR 95]; 15.4±0.7 (14.6/16.9) [GOL 99]; 17.5±0.9 [PER 00]
Diastase (DN)	(13.0/18.4) [IVA 78]; (18.9/33.2) [JAT 95]; 23.9±5.0 (10.6/42.9) [PER 95A]; 32.2±8.91 (23.9/51.0) [THR 95]; 17.4±2.5 (12.7/21.8) [GOL 99]; 24.5±5.2 [PER 00]
Invertase (U/kg)	158.7±29.4 (108.0/214.5) [PER 99, PER 00]; 188.0±42.6 (141.0/239.4) [SER 00]
Proline (mg/kg)	(71/526) [JAT 95]; 554±139 (432/734) [THR 95]; 733 (662/943) [FOL 96]; 590±150 [PER 00]; (573/1292) [SAN 01]
Fructose (g/100 g)	(35.0/44.7) [SHL 81]; 37.9±2.7 (34.7/41.2) [BRU 92]; (35.1/43.5) [JAT 95]; 41.9±2.1 (37.1/47.4) [PER 95A]; 41.9±1.3 [BOG 97]; 41.5±2.4 (37.6/46.0) [GOL 99]; 41.9±2.0 [PER 00]
Glucose (g/100 g)	(25.2/30.8) [SHL 81]; (25.6/30.5) [BOG 90]; 29.5±0.8 (28.8/30.6) [BRU 92]; (21.0/30.0) [JAT 95]; 26.4±1.4 (22.1/29.3) [PER 95A]; 27.4±1.13 [BOG 97]; 29.4±2.15 (23.6/32.4) [GOL 99]; 26.4±1.5 [PER 00]
Sucrose (g/100 g)	(0/6.2) [IVA 78]; (0.1/3.8) [BOG 90]; traces [BRU 92]; (0/0.20) [JAT 95]; 0.1±0.1 [PER 95A]; 0.50±0.65 [BOG 97]; (0.0/1.3) [BOG 99]; 0.77±0.23 (0.47/1.17) [GOL 99]; 0.04±0.06 [PER 00]
F+G (g/100 g)	(64.3/74.3) [JAT 95]; 68.2±2.7 (62.0/75.7) [PER 95A]; (62.0/81.4) [BOG 99]; 70.8±3.94 (61.9/78.4) [GOL 99]; 68.3±2.7 [PER 00]
F/G ratio	1.28±0.06 (1.20/1.35) [BRU 92]; (1.20/1.90) [JAT 95]; 1.59±0.11 (1.34/1.95) [PER 95A, PER 00]; 1.54±0.09 [BOG 97]; 1.42±0.10 (1.32/1.62) [GOL 99]
G/W ratio	(1.24/1.81) [JAT 95]; 1.51±0.13 (1.14/1.84) [PER 95A, PER 00]

CITRUS

PG/10 g honey · 10 ³	<20 [SER 87, SER 95, PER 00]
% Specific pollen	>15 [SER 87]; >10 [PER 00]
Colour (mm Pfund)	17 (17/34) [SER 87]; 30 (11/55) [MAT 92]; 14±5 (11/35) [PER 95A]; 11.7±5.2 [SER 95]; 14.3±5.5 [PER 00]
Electrical conductivity (mS/cm)	0.26±0.02 [ESP 81]; 0.22±0.04 (0.14/0.31) [POU 92]; 0.17±0.04 (0.10/0.25) [PER 95A]; 0.19±0.38 (0.15/0.31) [THR 95]; 0.23 (0.17/0.29) [CAB 97]; 0.28±0.57 (0.19/0.43) [KAR 97]; 0.18±0.03 (0.12/0.26) [MAT 98]; (0.10/0.35) [BOG 99]; 0.18±0.04 [PER 00]
Specific rotation [α] _D ²⁰	-14.0±2.0 (-17.7/-9.3) [PER 95A]; -13.5±2.1 [PER 00]
pH	3.8±0.1 [ESP 81]; 3.8±0.1 (3.5/4.1) [POU 92]; 3.9±0.1 (3.7/4.2) [PER 95A, PER 00]; 3.4±0.05 (3.3/3.6) [THR 95]; 3.4±0.24 (3.0/3.8) [KAR 97]; 4.0±0.1 (3.8/4.1) [MAT 98]
Free acidity (meq/kg)	24.7±1.8 [ESP 81]; 18.5 (12.9/24.2) [CAB 97]; 14.4±3.2 [PER 00]
Lactones (meq/kg)	2.0±0.2 [ESP 81]; 3.4 (0.60/5.02) [CAB 97]; 3.0±2.3 [PER 00]
Total acidity (meq/kg)	26.7±1.7 [ESP 81]; 22.0±5.9 (12.6/33.8) [POU 92]; 17.0±4.1 (10.0/25.0) [PER 95A]; 22.1 (13.5/29.2) [CAB 97]; 17.4±3.7 [PER 00]
Water (g/100 g)	17.9±0.7 [ESP 81]; 19.1±1.44 (17.3/21.4) [SER 87]; 17.3±1.2 (<19) [PER 95A]; 17.2±0.88 [SER 95]; 16.9±0.66 (16.0/18.5) [THR 95]; 17.6 (15.3/21.6) [CAB 97]; 17.8±0.98 (15.9/20.1) [KAR 97]; 18.2±0.93 (16.4/19.6) [MAT 98]; 18.2±1.40 (15.4/20.9) [POU 92]; 16.4±0.90 [PER 00]
Diastase (DN)	(13.1/21.5) [SER 88B]; 9.3±2.8 (3.4/16.3) [PER 95A]; 17.6±2.69 [SER 95]; 11.7±3.78 (8.6/15.5) [THR 95]; 9.9 (1.8/21.1) [CAB 97]; 13.8±5.35 (6.1/40.6) [KAR 97]; 8.9±2.6 [PER 00]
Invertase (U/kg)	22.8±8.8 (12.5/52.9) [KAR 97]; 38.9±16.9 (7.3/69.8) [PER 99]; 39.7±16.9 [PER 00]; 66.8±14.8 (51.2/90.0) [SER 00]
Proline (mg/kg)	326±134 (264/636) [THR 95]; 415 (140/655) [CAB 97]; 861±88 (752/975) [KAR 97]; 230±90 [PER 00]
Fructose (g/100 g)	42.6*±1.5 [ESP 81]; 35.4±1.5 (32.8/38.6) [SER 87]; 37.7±1.1 (35.7/39.6) [POU 92]; 38.8±3.0 (33.5/45.1) [PER 95A]; 33.3±1.2 [SER 95]; 38.5 (35.2/44.5) [CAB 97]; 36.7±2.0 (31.9/39.1) [MAT 97, MAT 98]; 38.4±2.6 [PER 00]
Glucose (g/100 g)	39.2*±1.4 [ESP 81]; 29.7±1.48 (27.4/32.8) [SER 87]; 31.0±1.0 (29.0/33.9) [POU 92]; 32.2±1.3 (29.8/35.7) [PER 95A]; 28±0.97 [SER 95]; 30.5 (27.0/33.8) [CAB 97]; 30.2±2.3 (25.3/34.3) [MAT 97, MAT 98]; 32.0±1.6 [PER 00]
Sucrose (g/100 g)	0.9*±0.1 [ESP 81]; 2.97±1.7 (0.24/5.7) [SER 87]; 1.60±1.8 (0.0/7.5) [POU 92]; 0.90±1.1 (0/4.5) [PER 95A]; 13.4±2.4 [SER 95]; 4.45±3.3 (1.05/12.0) [MAT 97, MAT 98]; 1.00±1.2 [PER 00]
F+G (g/100 g)	71.0±3.6 (63.7/77.9) [PER 95A]; 71.9 (67.1/76.1) [CAB 97]; 70.4±3.6 [PER 00]
F/G ratio	1.10±0.07 [ESP 81]; 1.21±0.09 (1.16/1.28) [POU 92]; 1.20±0.09 (1.02/1.43) [PER 95A]; 1.26 (1.12/1.55) [CAB 97]; 1.21±0.05 (1.12/1.30) [MAT 97]; 1.20±0.08 [PER 00]
G/W ratio	1.87±0.13 (1.58/2.12) [PER 95A]; 1.76 (1.30/2.04) [CAB 97]; 1.66±0.16 (1.39/1.91) [MAT 97, MAT 98]; 1.90±0.16 [PER 00]
* % of dry matter	

EUCALYPTUS

PG/10 g honey · 10 ³	>100 [SER 88C, PER 00]
% Specific pollen	>74 [SER 88C]; >90 [PER 00]
Colour (mm Pfund)	71 (51/83) [MAT 92]; 58±11 (41/71) [PER 95A]; 55±10 [PER 00]
Electrical conductivity (mS/cm)	0.59±0.1 (0.43/0.79) [SER 88C]; 0.50±0.08 (0.36/0.71) [PER 95A]; 0.46±0.09 (0.34/0.66) [MAT 98]; (0.19/1.33) [BOG 99]; 0.48±0.06 [PER 00]
Specific rotation [α] _D ²⁰	-14±2.1 (-17.1/-11.8) [PER 95A]; -13.4± 2.3 [PER 00]
pH	3.9±0.1 (3.7/4.1) [PER 95A, PER 00]; 4.1±0.18 (3.82/4.35) [MAT 98]
Free acidity (meq/kg)	21.0±4.3 (13.3/30.9) [SER 88C]; 19.5±5.1 [PER 00]
Lactones (meq/kg)	7.3±1.3 (4.38/9.62) [SER 88C]; 3.3±2.4 [PER 00]
Total acidity (meq/kg)	28.3±5.22 (18.41/39.71) [SER 88C]; 24.1±5.0 (14.7/32.2) [PER 95A]; 22.1±4.6 [PER 00]
Water (g/100 g)	16.8±1.04 (14.8/18.9) [SER 88C]; 16.5±1.0 (<18) [PER 95A]; 15.7±0.83 (14.1/16.7) [MAT 98]; 15.7±0.90 [PER 00]
Diastase (DN)	18.0±5.6 (9.5/28.6) [SER 88C]; 26.1±4.9 (16.2/34.9) [PER 95A]; 26.0±4.1 [PER 00]
Invertase (U/kg)	154.2±28.6 (99.2/207.9) [PER 99, PER 00]; 77.9±36.0 (46.3/117.5) [SER 00]
Proline (mg/kg)	470*±115 (313/626) [SAN 01]; 571**±150 (340/842) [SAN 01]
Fructose (g/100 g)	38.6±3.1 (33.4/43.7) [PER 95A]; 38.7±0.6 (37.0/39.2) [MAT 97, MAT 98]; 39.1±2.3 [PER 00]
Glucose (g/100 g)	32.9±1.0 (31.2/34.5) [PER 95A]; 31.7±1.4 (28.5/33.9) [MAT 97, MAT 98]; 33.6±1.1 [PER 00]
Sucrose (g/100 g)	1.3±0.8 (0.1/2.8) [PER 95A]; 0.3±0.28 (0.07/0.94) [MAT 97, MAT 98]; (0.1/2.8) [BOG 99]; 1.2±0.8 [PER 00]
F+G (g/100 g)	71.5±3.3 (66.3/77.0) [PER 95A]; (63.3/77.0) [BOG 99]; 72.7±2.9 [PER 00]
F/G ratio	1.17±0.10 (1.01/1.40) [PER 95A]; 1.22±0.05 (1.15/1.37) [MAT 97, MAT 98]; 1.16±0.06 [PER 00]
G/W ratio	2.04±0.14 (1.80/2.32) [PER 95A]; 2.02±0.14 (1.71/2.26) [MAT 97, MAT 98]; 2.17±0.17 [PER 00]
* data from Galizia ** data from Basque Country	

HELIANTHUS

PG/10 g honey · 10 ³	<50 [PER 95A]; <30 [PER 00]
% Specific pollen	(10/95) [POU 92]; >15 [PER 00]
Colour (mm Pfund)	(35/75) [GON 87]; 67.5 (51/83) [MAT 92]; 61±6 (51/71) [PER 95A, PER 00]
Electrical conductivity (mS/cm)	0.31 [IVA 78]; 0.31 (0.23/0.45) [POU 92]; 0.24±0.08 (0.12/0.40) [ORT 95]; 0.35±0.04 (0.28/0.43)[PER 95A]; 0.43±0.12 (0.26/0.57) [THR 95]; 0.24 (0.20/0.28) [FOL 96]; 0.41±0.55 (0.29/0.55) [KAR 97]; 0.37±0.06 (0.28/0.46) [MAT 98]; (0.20/0.60) [BOG 99]; 0.34±0.04 [PER 00]; 0.30 (0.23/0.49) [IVA 02]
Specific rotation [α] _D ²⁰	-18±1.2 (-19.8/-15.4) [PER 95A]; -17.6±1.4 [PER 00]
pH	3.9 (3.6/4.1) [POU 92]; 3.8±0.1 (3.6/4.1) [PER 95A, PER 00]; 3.8±0.12 (3.6/4.0) [THR 95]; 3.4±0.33 (2.9/4.0) [KAR 97]; 3.9±0.14 (3.6/4.2) [MAT 98]; 3.8 (3.4/3.9) [IVA 02]
Free acidity (meq/kg)	26.1±6.3 [PER 00]
Lactones (meq/kg)	3.7±3.0 [PER 00]
Total acidity (meq/kg)	(16.0/48.0) [IVA 78]; 26.2±5.4 (16.0/35.2) [PER 95A]; 29.9±6.5 [PER 00]
Water (g/100 g)	(15.6/21.0) [IVA 78]; 16.8±0.7 (<18) [PER 95A]; 17.4±0.84 (16.5/19.5) [THR 95]; 18.4±1.31 (15.0/20.6) [KAR 97]; 17.0±1.0 (14.5/18.2) [MAT 98]; 16.9±0.8 [PER 00]; 18.2 (18.0/18.8) [IVA 02]
Diastase (DN)	(8.3/38.5) [BAC 65]; (8.0/20.4) [IVA 78]; 15.4±3.0 (8.7/20.3) [PER 95A]; 15.9±3.17 (9.3/23.0) [THR 95]; 25.3±6.2 (14.4/44.2) [KAR 97]; 17.7±3.1 [PER 00]
Invertase (U/kg)	95.5±17.6 (66.1/119.7) [PER 99]; 94.8±16.9 [PER 00]; 160.1 (144.7/213.7) [IVA 02]
Proline (mg/kg)	665±352 (298/1199) [THR 95]; 419 (374/464) [FOL 96]; 493±111 (296/667) [KAR 97]; 720 ±110 [PER 00]
Fructose (g/100 g)	(34.8/40.3) [BAC 65]; 41.2 [MUR 76]; 38.5 (36.0/41.0) [POU 92]; 38.1±2.2 (35.1/41.6) [ORT 95]; 39.2±3.3 (32.6/44.7) [PER 95A]; 39.4±0.7 (38.3/40.6) [MAT 97, MAT 98]; 38.7±3.0 [PER 00]
Glucose (g/100 g)	(34.7/42.3) [BAC 65]; 31.1 [MUR 76]; (37/39) [GON 87]; 37.5 (35.0/42.0) [POU 92]; 31.2±1.9 (28.1/34.2) [ORT 95]; 37.6±1.5 (35.3/40.8) [PER 95A]; 35.4±1.4 (32.9/37.8) [MAT 97, MAT 98]; 37.0±1.5 [PER 00]; (35.2/41.3) [MAN 01]
Sucrose (g/100 g)	(1.3/3.6) [BAC 65]; (0.0/6.7) [IVA 78]; 0.20 (0.5 max) [POU 92]; 2.1±2.1 (0.0/7.0) [ORT 95]; 0.5±0.5 (tr./1.8) [PER 95A]; 0.073±0.037 (0.032/0.15) [MAT 97, MAT 98]; (0.0/1.8) [BOG 99]; 0.4±0.5 [PER 00]
F+G (g/100 g)	(69.4*/77.8) [IVA 78]; 76.8±3.7 (70.9/84.8) [PER 95A]; (68.7/84.8) [BOG 99]; 75.8±3.2 [PER 00]
F/G ratio	1.00 [GON 87]; 1.05 (<1.10) [POU 92]; 1.04±0.10 (0.84/1.16) [PER 95A]; 1.11±0.04 (1.06/1.20) [MAT 97, MAT 98]; 1.05±0.10 [PER 00]; (1.01/1.14) [MAN 01]
G/W ratio	2.24±0.12 (2.01/2.54) [PER 95A]; 2.10±0.18 (1.83/2.50) [MAT 97, MAT 98]; 2.19±0.15 [PER 00]
* reducing sugars	

LAVANDULA (*L. vera*, *L. latifolia*, *L. angustifolia* × *latifolia*)

PG/10 g honey · 10 ³	<20 [SER 87]
% Specific pollen	>13 [SER 87]; (2/10) [FAU 02]
Colour (mm Pfund)	<5.5 [ITA 75]; 35 [SAU 82B]; 34 (17/34) [SER 87, SER 88A]; 70 (46/99) [MAT 92]; 24±6 (11/45) [POU 92]
Electrical conductivity (mS/cm)	0.25 (<0.4) [ITA 75]; (0.25/0.40) [SAU 82B]; 0.42±0.17 (0.19/0.97) [SER 87, SER 88A]; 0.23±0.04 (0.15/0.37) [POU 92]; (0.12/0.60) [BOG 99]
pH	3.6 (3.3/4.0) [ITA 75, SAU 82B]; 3.5±0.20 (3.2/3.9) [POU 92]; (3.3/3.9) [FAU 02]
Free acidity (meq/kg)	19.0* (11.6/26.2) [ITA 75, SAU 82B]; (10/20) [FAU 02]
Lactones (meq/kg)	15.3* (10.0/21.4) [ITA 75, SAU 82B]
Total acidity (meq/kg)	34.2* (26.0/40.6) [ITA 75, SAU 82B]; 32.0±4.2 (22.0/42.0) [POU 92]
Water (g/100 g)	<17.5 [ITA 75, SAU 82B]; 16.0±0.43 (15.1/17.0) [SER 87, SER 88A]; 16.1±1.00 (14.9/18.4) [POU 92]; (15.3/17.8) [FAU 02]
Diastase (DN)	>8 [ITA 75, SAU 82B]; 45.4±10.5 (20.0/63.2) [SER 87, SER 88A]; 22.0±6.4 (14.0/37.0) [POU 92]; (8/22.3) [FAU 02]
Fructose (g/100 g)	41.9** (39.2/45.4) [ITA 75, SAU 82B]; 37.8±1.07 (35.5/39.8) [SER 87, SER 88A]; 35.0±1.20 (33.0/39.0) [POU 92]; (33/40) [FAU 02]
Glucose (g/100 g)	38.7** (36.9/42.2) [ITA 75, SAU 82B]; 32.1±1.44 (27.8/34.3) [SER 87, SER 88A]; 30.0±1.30 (28.0/34.0) [POU 92]; (28/33) [FAU 02]
Sucrose (g/100 g)	7.22** (2.0/11.6) [ITA 75, SAU 82B]; 0.38±0.44 (0.025/2.02) [SER 87, SER 88A]; 7.50±2.10 (2.0/12.0) [POU 92]; (0.0/15.0) [BOG 99]; (1/13) [FAU 02]
F+G (g/100 g)	(60.1/73.2) [BOG 99]
F/G ratio	1.08 (1.04/1.14) [ITA 75, SAU 82B]; 1.18±0.04 (1.13/1.23) [POU 92]; (1.1/1.3) [FAU 02]
G/W ratio	2.00 (1.80/2.20) [ITA 75]
* pH at equivalent point ** % of dry matter	

RHODODENDRON

PG/10 g honey · 10 ³	<20 [PER 00]
% Specific pollen	(50/70) [BOG 90]; 53±13 [BOG 97]; >25 [PER 00]
Colour (mm Pfund)	13±5 (11/27) [PER 95A]; 13.1±4.8 [PER 00]
Electrical conductivity (mS/cm)	(0.22/0.35) [BOG 90]; 0.22±0.05 (0.15/0.33) [PER 95A, PER 00]; 0.26±0.05 [BOG 97]; (0.15/0.45) [BOG 99]
Specific rotation [α] _D ²⁰	-6±2.4 (-10.7/-2.3) [PER 95A]; -6.1±2.5 [PER 00]
pH	3.9±0.1 (3.8/4.2) [PER 95A, PER 00]; 3.9±1.7 [BOG 97]
Free acidity (meq/kg)	13.7±3.4 [PER 00]

Lactones (meq/kg)	1.3±1.3 [PER 00]
Total acidity (meq/kg)	13.6±3.0 (7.4/18.9) [PER 95A]; 15±3.5 [PER 00]
Water (g/100 g)	(15.6/16.6) [BOG 90]; 16.6±0.6 (<18) [PER 95A]; 16.8±0.9 [PER 00]
Diastase (DN)	11.8±2.4 (7.1/16.7) [PER 95A]; 12.2±2.5 [PER 00]
Invertase (U/kg)	81.5±19.8 (53.6/130.0) [PER 99]; 82.3±19.8 [PER 00]
Proline (mg/kg)	250±30 [PER 00]
Fructose (g/100 g)	40.2±2.2 (36.5/45.5) [PER 95A]; 36.2±1.7 [BOG 97]; 38.0±2.6 [PER 00]
Glucose (g/100 g)	(23.3/27.8) [BOG 90]; 30.6±2.4 (27.2/34.8) [PER 95A]; 25.5±1.9 [BOG 97]; 30.2±1.5 [PER 00]
Sucrose (g/100 g)	(0.9/4.3) [BOG 90]; 0.5±0.5 (0/1.5) [PER 95A]; 3.0±1.3 [BOG 97]; (0.9/4.3) [BOG 99]; 0.4±0.4 [PER 00]
F+G (g/100 g)	70.8±4.0 (63.7/79.4) [PER 95A]; (60.8/79.4) [BOG 99]; 68.1±3.3 [PER 00]
F/G ratio	1.31±0.09 (1.06/1.48) [PER 95A]; 1.42±0.14 [BOG 97]; 1.26±0.09 [PER 00]
G/W ratio	1.83±0.14 (1.62/2.12) [PER 95A]; 1.8±0.1 [PER 00]

ROBINIA

PG/10 g honey · 10 ³	<20 [PER 00]
% Specific pollen	low, very low [ITA 75]; (10/25) [BOG 90]; 17 [POU 92]; 20±5 [BOG 97]; >15 [PER 00]
Colour (mm Pfund)	<30 [ITA 75]; 11±0 (11/11) [BRU 92]; 15±6 (11/27) [PER 95A]; 14.5±5.9 [PER 00]
Electrical conductivity (mS/cm)	(0.13/0.30) [ITA 75]; (0.15/0.26) [BOG 90]; 0.15 (0.14/0.17) [KRA 91]; 0.15±0.06 (0.10/0.22) [BRU 92]; 0.16±0.04 (0.10/0.30) [POU 92]; 0.15±0.03 (0.09/0.27) [PER 95A]; 0.19 (0.16/0.22) [FOL 96]; 0.19±0.04 [BOG 97]; (0.09/0.30) [BOG 99]; 0.23±0.04 (0.17/0.29) [GOL 99]; 0.15±0.04 [PER 00]; 0.14 (0.09/0.21) [IVA 02]; 0.1±0.1 [DIN 03]
Specific rotation [α] _D ²⁰	-14.2 (-5.9/-20.5) [IVA 78]; -17.0±2.7 (-23.4/-10.9) [PER 95A]; -16.9±2.67 [PER 00]; -15.1 (-6.1/-19.5) [IVA 02]; -17.0±1.2 [DIN 03]
pH	3.9 (3.7/4.1) [ITA 75]; 3.9 (3.8/4.0) [KRA 91]; 4.0±0.2 (3.8/4.2) [BRU 92]; 3.9±0.1 (3.6/4.2) [POU 92]; 4.0±0.1 (3.7/4.3) [PER 95A]; 3.8±0.25 [BOG 97]; 3.7±0.13 (3.5/4.0) [GOL 99]; 3.9±0.17 [PER 00]
Free acidity (meq/kg)	8.0* (5.7/11.9) [ITA 75]; 13.8±0.7 (9.0/26.0) [IVA 78]; 15.2 (10.6/18.2) [KRA 91]; 10.0 [BRU 92]; 5.0 (3.9/5.9) [FOL 96]; 24.4±2.71 (20.1/31.0) [GOL 99]; 10.9±2.57 [PER 00]; 13.0±0.07 (8.5/17.8) [IVA 02]
Lactones (meq/kg)	5.5* (2.2/9.4) [ITA 75]; 4.9 (4.2/6.0) [KRA 91]; 3.4 (1.53/4.58) [FOL 96]; 2.4±1.77 [PER 00]
Total acidity (meq/kg)	13.7* (8.9/20.4) [ITA 75]; 20.0 (16.3/22.7) [KRA 91]; 14.3±4.5 (6.3/27.6) [POU 92]; 12.4±2.6 (7.8/19.0) [PER 95A]; 8.4 (5.4/10.0) [FOL 96]; 13.3±3.4 [PER 00]

Water (g/100 g)	< 18 [ITA 75]; 18.2±0.2 (15.2/20.4) [IVA 78]; (13.5/19.1) [BOG 90]; 17.0 (16.0/18.5) [KRA 91]; 18.0±0.3 (17.7/18.3) [BRU 92]; 17.6±0.8 (16.1/19.8) [POU 92]; 16.4±0.9 (<18) [PER 95A]; 16.5±1 (14.2/19.9) [GOL 99]; 16.6±0.9 [PER 00]; 17.5 (15.2/19.4) [IVA 02]; 16.7±0.9 [DIN 03]
Diastase (DN)	>10 (10/20) [ITA 75]; 8.7±0.4 (5.2/14.8) [IVA 78]; 11.5 (8.3/13.9) [KRA 91]; 8.6±2.9 (3.1/15.5) [PER 95A]; 9.3±1.94 (6.6/12.8) [GOL 99]; 8.7±2.7 [PER 00]; 13.6±0.8 (8.0/21.0) [IVA 02]
Invertase (U/kg)	51.4 (36.7/79.3) [KRA 91]; 26.4±16.2 (2.9/56.6) [PER 99]; 27.2±17.6 [PER 00]; 29.4±4.4 (27.2/34.5) [SER 00]; 27.9±17.6 [DIN 03]
Proline (mg/kg)	229 (182.3/275.4) [KRA 91]; 199 (189/283) [FOL 96]; 210±50 [PER 00]; 213.4±172.3 [DIN 03]
Fructose (g/100 g)	49.2** (44.7/53.7) [ITA 75]; 44.1 (40.7/48.1) [KRA 91]; 42.1±2.2 (40.0/44.3) [BRU 92]; 41.4±1.3 (39.0/44.0) [POU 92]; 43.1±2.9 (36.9/48.5) [PER 95A]; 49.6 (47.7/51.2) [FOL 96]; 41.6±0.9 [BOG 97]; (39.6/41.4) [IVA 97]; 43.7±1.64 (39.0/47.2) [GOL 99]; 43.5±2.37 [PER 00]
Glucose (g/100 g)	34.3** (29.2/38.0) [ITA 75]; (24.6/25.6) [BOG 90]; 28.4 (25.8/30.8) [KRA 91]; 29.2±0.5 (28.7/29.7) [BRU 92]; 26.6±1.3 (22.6/29.2) [POU 92]; 25.9±1.5 (21.0/28.8) [PER 95A]; 30.4 (28.7/32.9) [FOL 96]; 24.7±0.6 [BOG 97]; (23.3/23.7) [IVA 97]; 29.2±1.1 (26.9/31.6) [GOL 99]; 26.1±1.27 [PER 00]
Sucrose (g/100 g)	2.5** (0.5/9.1) [ITA 75]; (2.0/4.8) [BOG 90]; 2.3 (1.05/3.56) [KRA 91]; 0.4±0.5 (0.0/0.1) [BRU 92]; 1.8±1.7 (0.1/9.1) [POU 92]; 2.5±2.1 (0.1/10.1) [PER 95A]; 1.1 (0.1/3.8) [FOL 96]; 3.2±0.9 [BOG 97]; (1.1/1.6) [IVA 97]; (0.0/10.0) [BOG 99]; 2.3±1.63 (0.92/6.40) [GOL 99]; 2.3±1.9 [PER 00]
F+G (g/100 g)	72.6 (66.5/77.3) [KRA 91]; 69.0±3.7 (59.0/75.4) [PER 95A]; 79.9 (77.3/83.1) [FOL 96]; (64.3/64.8) [IVA 97]; (60.6/83.8) [BOG 99]; 72.9±2.2 (67.5/78.8) [GOL 99]; 69.6±3.0 [PER 00]
F/G ratio	1.43 (1.32/1.56) [ITA 75]; 1.45±0.10 (1.35/1.54) [BRU 92]; 1.55±0.09 (1.38/1.79) [POU 92]; 1.67±0.11 (1.38/1.89) [PER 95A]; 1.63 (1.56/1.68) [FOL 96]; 1.70±0.05 [BOG 97]; (1.67/1.77) [IVA 97]; 1.50±0.07 (1.35/1.65) [GOL 99]; 1.67±0.10 [PER 00]
G/W ratio	1.63 (1.48/1.80) [ITA 75]; 1.55±0.11 (1.24/1.82) [PER 95A]; 1.57±0.10 [PER 00]
* pH at equivalent point ** % of dry matter	

ROSMARINUS

PG/10 g honey · 10 ³	<20 [PER 00]
% Specific pollen	>10 [ITA 75, GON 83, PER 00]
Colour (mm Pfund)	<35 [ITA 75]; 23 (11/51) [MAT 92]; 18.3 ± 9.0 (11/35) [PER 95B] 16.0±6.3 [PER 00]
Electrical conductivity (mS/cm)	<0.25 [ITA 75]; <0.25 [GON 83]; 0.22±0.07 (0.13/0.32) [SER 87]; 0.16±0.01 [PEZ 90]; 0.14±0.04 (0.10/0.25) [POU 92]; 0.19±0.05 (0.12/0.25) [ORT 95]; 0.15±0.03 (0.10/0.24) [PEZ 95A]; 0.17±0.05 (0.09/0.25) [MAT 98]; (0.10/0.35) [BOG 99]; 0.16±0.04 [PER 00]

Specific rotation $[\alpha]_D^{20}$	-2.25 [JUA 92]; -2.78±2.99 (-8.45/4.67) [PEZ 95A]; -6.9±2.5 [PER 00]
pH	3.8 (3.5/4.1) [ITA 75, SAU 82A, GON 83]; 3.7±0.03 [PEZ 90]; 3.9±0.2 (3.2/4.1) [POU 92]; 3.7 (3.4/3.9) [PEZ 95A]; (3.7/4.5) [RUS 97]; 3.9±0.18 (3.68/4.20) [MAT 98]; 3.8±0.2 [PER 00]
Free acidity (meq/kg)	7.4* (4.0/11.0) [ITA 75, SAU 82A, GON 83]; 16.7±0.43 [PEZ 90]; 16.2±2.2 (10.5/20.0) [PEZ 95A]; 20.0±0.7 [MEN 98]; (11/22) [RUS 97]; 15.7±4.1 [PER 00]
Lactones (meq/kg)	6.2* (1.0/10.4) [ITA 75, SAU 82A, GON 83]; 0.93±0.20 [PEZ 90]; 1.1±1.3 (0/6.1) [PEZ 95A]; 2.1±1.7 [PER 00]
Total acidity (meq/kg)	13.6* (8.7/19.1) [ITA 75, SAU 82A, GON 83]; 17.6±0.53 [PEZ 90]; 13.6±2.8 (9.0/19.0) [POU 92]; 17.2±2.45 (10.5/21.5) [PEZ 95A]; 17.7 ± 4.6 [PER 00]
Water g/100 g	<17.5 [ITA 75, GON 83]; 19.2±1.8 (16.6/21.4) [SER 87]; 16.6±0.18 [PEZ 90]; 17.6±1.2 (16.0/20.0) [POU 92]; 16.8±0.73 (15.4/18.3) [PEZ 95A]; 15.2±0.02 [MEN 98]; (14.5/16.5) [RUS 97]; 19.1±1.29 (17.3/20.8) [MAT 98]; 16.5±1.1 [PER 00]
Diastase (DN)	<10 (10/20) [ITA 75, GON 83]; 30.9±11.4 (16.7/42.9) [SER 87]; 19.0±6.8 (10.0/36.0) [POU 92]; 18.0±4.88 (10/29) [PEZ 95A]; 8.2±0.6 [MEN 98]; (3.3/10.6) [RUS 97]; 9.1±2.2 [PER 00]
Invertase (U/kg)	61.0±15.4 (28.6/86.7) [PER 99]; 60.2±16.9 [PER 00]; 105.8±42.1 (44.1/176.3) [SER 00]
Proline (mg/kg)	320.0±70.0 [PER 00]
Fructose (g/100 g)	42.8** (38.8/45.0) [ITA 75, SAU 82A, GON 83]; (39.0/41.3) [GON 79]; 35.3±1.2 (33.4/37.5) [SER 87]; 36.1 [JUA 92]; 36.4±0.9 (32.8/39.0) [POU 92]; 36.7±2.3 (33.4/40.5) [ORT 95]; 36.6±2.43 (31.9/42.5) [PEZ 95A]; 36.2±1.6 (33.7/40.1) [MAT 97]; 37.9±1.1 [MEN 98, MAT 98]; 38.5±1.1 [PER 00]
Glucose (g/100 g)	39.3** (35.5/41.8) [ITA 75, SAU 82A, GON 83]; (36.9/38.5) [GON 79]; 29.5±1.3 (27.8/32.6) [SER 87]; 30.8 [JUA 92]; 32.4±0.9 (29.0/35.0) [POU 92]; 28.5±1.4 (26.3/30.1) [ORT 95]; 31.2± 2.3 (26.3/36.0) [PEZ 95A]; 31.2±2.3 (28.6/37.0) [MAT 97]; 31.6±3.2 [MEN 98, MAT 98]; 33.7±1.3 [PER 00]
Sucrose (g/100 g)	3.86** (0.90/12.5) [ITA 75, SAU 82A, GON 83]; 1.1±1.11 (0.05/3.7) [SER 87]; 2.2 [JUA 92]; 2.7±1.9 (0.6/6.8) [POU 92]; 4.2±3.2 (1.0/8.7) [ORT 95]; 1.97±1.39 (0.07/5.85) [PEZ 95A]; 1.6±2.2 (0.045/5.7) [MAT 97, MAT 98]; (2.9***/11.9) [RUS 97]; (0.0/4.6) [BOG 99]; 0.3±0.4 [PER 00]
F+G (g/100 g)	(64.3****/71.6) [RUS 97]; (64.8/84.1) [BOG 99]; 72.2±1.9 [PER 00]
F/G ratio	1.08 (1.02/1.13) [ITA 75, SAU 82A, GON 83]; 1.12±0.03 (1.08/1.21) [POU 92]; 1.17±0.1 (0.99/1.40) [MAT 97]; 1.20 [MEN 98, MAT 98]; 1.14±0.05 [PER 00]
G/W ratio	1.64±0.14 (1.43/1.89) [MAT 97, MAT 98]; 2.03±0.11 [PER 00]
* pH at equivalent point ** % of dry matter *** apparent sucrose **** reducing sugars	

TARAXACUM

PG/10 g honey · 10 ³	<60 [PER 00]
% Specific pollen	(15/60) [BOG 90]; low, very low [BRU 92]; 29±15 [BOG 97]; (5/30) [PER 00]
Colour (mm Pfund)	51±8 (41/62) [BRU 92]; 54±11 (41/71) [PER 95A]; 56.8±9.8 [PER 00]
Electrical conductivity (mS/cm)	0.56 [VOR 64]; (0.50/0.65) [BOG 90]; 0.42±0.09 (0.29/0.52) [BRU 92]; 0.52±0.04 (0.46/0.59) [PER 95A, PER 00]; 0.59±0.05 [BOG 97]; (0.29/0.65) [BOG 99]
Specific rotation [α] _D ²⁰	-10±2.4 (-14.8/-5.5) [PER 95A]; -9.9±2.0 [PER 00]
pH	4.4±0.3 (4.1/5.0) [BRU 92]; 4.5±0.2 (4.1/5.0) [PER 95A, PER 00]; 4.3±0.17 [BOG 97]
Free acidity (meq/kg)	9.9±1.8 (8.0/13.0) [BRU 92]; 11.7±2.8 [PER 00]
Lactones (meq/kg)	1.9±1.8 [PER 00]
Total acidity (meq/kg)	13.2±3.9 (7.4/24.7) [PER 95A]; 12.3±2.4 [PER 00]
Water g/100 g	(14.4/17.2) [BOG 90]; 16.3±0.7 (15.0/17.5) [BRU 92]; 16.9±0.9 (<18.5) [PER 95A]; 17.1±0.7 [PER 00]
Diastase (DN)	9.5±3.7 (3.4/17.4) [PER 95A]; 13.7±4.2 [PER 00]
Invertase (U/kg)	75.7±21.3 (39.7/106.5) [PER 99]; 102.8±26.4 [PER 00]
Proline (mg/kg)	340±70 [PER 00]
Fructose (g/100 g)	49.9* [MAU 64]; 34.3±2.5 (30.0/37.6) [BRU 92]; 38.8±1.9 (34.6/42.6) [PER 95A]; 35.9±0.75 [BOG 97]; 38.1±1.4 [PER 00]
Glucose (g/100 g)	40.1* [MAU 64]; (32.2/37.1) [BOG 90]; 36.2±2.4 (33.6/41.0) [BRU 92]; 39.1±2.5 (34.5/43.5) [PER 95A]; 34.5±1.37 [BOG 97]; 38.4±2.0 [PER 00]
Sucrose (g/100 g)	6.3* [MAU 64]; (0.1/0.6) [BOG 90]; 1.2±1.5 (tr./0.5) [PER 95A]; 0.37±0.37 [BOG 97]; (0.0/5.0) [BOG 99]; 0.2±0.6 [PER 00]
F+G (g/100 g)	77.9±3.7 (70.3/84.2) [PER 95A]; (67.4/84.2) [BOG 99]; 76.5±3.0 [PER 00]
F/G ratio	0.95±0.07 (0.84/1.06) [BRU 92]; 0.99±0.04 (0.90/1.10) [PER 95A]; 1.11±0.08 [BOG 97]; 0.99±0.04 [PER 00]
G/W ratio	2.27±0.12 (2.03/2.49) [PER 95A]; 2.24±0.13 [PER 00]
*expressed as % of total carbohydrates	

THYMUS

PG/10 g honey · 10 ³	<20 [PER 00]
% Specific pollen	>26 [DRI 95]; >15 [PER 00]; >18 [TSI 00]
Colour (mm Pfund)	52±16 (27/83) [PER 95A]; 49.7±11.6 [PER 00]
Electrical conductivity (mS/cm)	(0.28*/0.74) (0.24**/0.77) [DRI 95]; 0.38±0.04 (0.32/0.49) [PER 95A]; 0.42±0.94 (0.25/0.52) [THR 95]; 0.42±1.06 (0.22/0.64) [KAR 97]; (0.24/0.72) [BOG 99]; 0.39±0.05 [PER 00]; 0.39 (0.25/0.50) [TSI 00]

Specific rotation $[\alpha]_D^{20}$	-20.0±2.4 (-24.5/-17.0) [PER 95A]; -20.3±2.2 [PER 00]
pH	(2.2*/4.2) (2.7**/4.2) [DRI 95]; 3.8±0.1 (3.6/4.0) [PER 95A, PER 00]; 3.7±0.1 (3.5/4.1) [THR 95]; 3.4±0.4 (2.2/4.1) [KAR 97]
Free acidity (meq/kg)	37.1±6.1 [PER 00]
Lactones (meq/kg)	2.7±2.5 [PER 00]
Total acidity (meq/kg)	41.1±4.9 (32.5/57.2) [PER 95A]; 39.8±5.2 [PER 00]
Water (g/100 g)	(15.0*/20.3) (14.9**/19.7) [DRI 95]; 16.5±1.3 (<18.5) [PER 95A]; 16.1±0.51 (15.4/17.0) [THR 95]; 17.1±0.92 (14.9/20.3) [KAR 97]; 16.6±1.1 [PER 00]; 15.7 (14.7/17.9) [TSI 00]
Diastase (DN)	(15.6*/44.8) (8.0**/43.0)[DRI 95]; 32.7±4.6 (24.3/42.8) [PER 95A]; 32.5±8.6 (15.1/48.2) [THR 95]; 24.9±7.7 (12.0/45.1) [KAR 97]; 30.7±6.8 [PER 00]; 18.9 (10.3/32.4) [TSI 00]
Invertase (U/kg)	35.3±9.0 (23.5/54.4) [KAR 97]; 135.1±25.7 (101.4/196.8) [PER 99]; 136.6±25.7 [PER 00]; 112.4 (30.8/213.0) [TSI 00]
Proline (mg/kg)	790±232 (596/1205) [THR 95]; 893±255 (525/1311) [KAR 97]; 930±110 [PER 00]; 1105 (306/1873) [TSI 00]
Fructose (g/100 g)	42.6±2.5 (38.0/49.2) [PER 95A, PER 00]
Glucose (g/100 g)	30.2±1.4 (26.8/33.8) [PER 95A, PER 00]; (26.3/32.6) [MAN 01]
Sucrose (g/100 g)	0.1±0.1 (0/0.6) [PER 95A, PER 00]; (0.0/0.6) [BOG 99]
F+G (g/100 g)	72.8±3.1 (68.0/80.3) [PER 95A, PER 00]; (64.0/80.3) [BOG 99]
F/G ratio	1.41±0.10 (1.23/1.58) [PER 95A, PER 00]; (1.27/1.49) [MAN 01]
G/W ratio	1.86±0.18 (1.52/2.25) [PER 95A, PER 00]
* values from continental Greece ** values from Greek islands	

TILIA

PG/10 g honey · 10 ³	<20 [PER 95A]; 11±5.6 (2/24) [PER 00]
% Specific pollen	variable, very low [PER 95A, PER 00]; (21/38) [IVA 02]
Colour (mm Pfund)	52±25 (11/71) [BRU 92]; 43±17 (11/71) [PER 95A]; 35.4±12.6 [PER 00]
Electrical conductivity (mS/cm)	0.29 [VOR 64]; (0.64/0.87) [RAV 75]; 0.64 (0.49/0.76) [KRA 91]; 0.78±0.16 (0.54/0.96) [BRU 92]; 0.67±0.12 (0.42/0.99) [PER 95A]; 0.81±0.08 (0.70/0.91) [GOL 99]; 0.64±0.10 [PER 00]
Specific rotation $[\alpha]_D^{20}$	-12.5±2.1 (-18.0/-8.0) [PER 95A]; -11.8±2.4 [PER 00]
pH	(4.05/4.91) [RAV 75]; 4.4 (4.2/4.7) [KRA 91]; 4.5±0.3 (4.2/5.1) [BRU 92]; 4.4±0.3 (3.9/5.2) [PER 95A]; 4.1±0.35 (3.9/4.8) [GOL 99]; 4.3±0.2 [PER 00]

Free acidity (meq/kg)	23.2 (14.5/35.1) [KRA 91]; 24.4±10.1 (13.0/35.0) [BRU 92]; 25.0±5.1 (16.0/30.0) [GOL 99]; 22.1±8.6 [PER 00]; (16.5/31.0) [IVA 02]
Lactones (meq/kg)	7.7 (5.2/9.2) [KRA 91]; 2.1±1.1 [PER 00]
Total acidity (meq/kg)	30.9 (20.1/44.2) [KRA 91]; 24.6±8.7 (8.5/38.1) [PER 95A]; 24.2±8.8 [PER 00]
Water (g/100 g)	(17.0/20.4) [RAV 75]; 20.1 (17.4/21.3) [KRA 91]; 17.6±1.2 (16.3/18.9) [BRU 92]; 16.9±0.8 (<18.5) [PER 95A]; 16.6±1.34 (14.9/18.1) [GOL 99]; 16.8±0.8 [PER 00]; (16.7/18.8) [IVA 02]
Diastase (DN)	20.5 (13.9/29.4) [KRA 91]; 17.9±5.3 (9.6/34.3) [PER 95A]; 13.2±1.94 (10.6/15.4) [GOL 99]; 17.7± 3.7 [PER 00]; (10.4/17.7) [IVA 02]
Invertase (U/kg)	157.2 [KRA 91]; 94.0±27.9 (49.2/145.4) [PER 99]; 94.0±30.1 [PER 00]
Proline (mg/kg)	424.3 (243.8/568.3) [KRA 91]; 420.0±90.0 [PER 00]; 469 (373/640) [IVA 02]
Fructose (g/100 g)	38.9 (35.9/41.0) [KRA 91]; 38.6±1.7 (37.5/40.6) [BRU 92]; 38.3±4.0 (30.2/47.2) [PER 95A]; 39.1 [IVA 97]; 39.9±2.89 (35.7/43.0) [GOL 99]; 39.5±2.8 [PER 00]
Glucose (g/100 g)	34.6 (31.7/35.9) [KRA 91]; 32.3±1.3 (31.1/34.2) [BRU 92]; 30.3±2.2 (25.7/34.8) [PER 95A]; 27.3 [IVA 97]; 31.6±1.4 (29.0/33.1) [GOL 99]; 30.7±2.1 [PER 00]
Sucrose (g/100 g)	0.38 (0.22/0.54) [KRA 91]; 0.10±0.2 (0.0/0.4) [BRU 92]; 0.10±0.1 (0/0.5) [PER 95A, PER 00]; 1.23 [IVA 97]; 0.57±0.21 (0.42/0.72) [GOL 99]
F+G (g/100 g)	73.5 (71.4/76.5) [KRA 91]; 68.7±5.2 (58.9/77.7) [PER 95A]; 70.6±2.14 (66.1/73.03) [GOL 99]; 70.2±3.9 [PER 00]
F/G ratio	1.20±0.04 (1.16/1.25) [BRU 92]; 1.27±0.13 (1.00/1.60) [PER 95A]; 1.24±0.14 (1.10/1.48) [GOL 99]; 1.29±0.11 [PER 00]
G/W ratio	1.79±0.16 (1.50/2.00) [PER 95A]; 1.83±0.14 [PER 00]

HONEYDEW HONEY

PE/10 g honey	variable (<300,000) [PER 00]
HDE/PG ratio	variable [PER 95A]
Colour (mm Pfund)	86±14 (51/110) [BRU 92]; 119 (83/140) [MAT 92]; 80±7 (62/106) [POU 92]; 99±16 (83/130) [PER 95A]; 98.4±15.2 [PER 00]
Electrical conductivity (mS/cm)	>0.95 [ITA 75]; (0.66/1.14) [RAV 75]; 0.94 (0.74/1.30) [KRA 91]; 1.01±0.30 (0.90/1.80) [BRU 92]; 1.10±0.14 (0.75/1.46) [POU 92]; 1.50± 0.22 (1.02/2.11) [PER 95A]; 1.40±0.19 (1.01/1.69) [THR 95]; 1.50 (1.32/1.8) [FOL 96]; 1.29±1.79 (1.00/1.71) [KAR 97]; 0.98*±0.10 (0.82/1.21) [MAT 98]; (0.80/2.11) [BOG 99]; 1.15±0.15 (0.97/1.29) [GOL 99]; 1.45±0.26 [PER 00]; 1.08±0.13 (0.9/1.29) [CEL 01]; 1.1±0.2 [DIN 03]
Specific rotation $[\alpha]_D^{20}$	14.0± 5.0 (6.0/29.7) [PER 95A]; 14.3±5.7 [PER 00]; 4.2±1.3 [DIN 03]
pH	4.9 (4.6/5.3) [ITA 75]; (4.00/4.52) [RAV 75]; 4.6 (4.00/4.99) [KRA 91]; 4.5±0.3 (4.2/5.1) [BRU 92]; 5.1±0.2 (4.6/5.5) [POU 92]; 5.3± 0.2 (4.8/5.8) [PER 95A]; 5.0±0.26 (4.7/5.9) [THR 95]; 4.5±0.26 (4.0/5.2) [KAR 97]; 4.6*±0.14 (4.4/5.0) [MAT 98]; 4.58±0.16 (4.4/4.8) [GOL 99]; 5.2±0.3 [PER 00]; 4.53±0.16 (4.22/4.76) [CEL 01]

Free acidity (meq/kg)	19.8** (14.4/26.2) [ITA 75]; 33.1 (23.2/47.5) [KRA 91]; 31.3±6.4 (22.0/39.0) [BRU 92]; 25.7 (22.5/28.9) [KAR 97]; 26.5±6.0 [PER 00]
Lactones (meq/kg)	3.0** (1.0/8.5) [ITA 75]; 6.5 (4.5/9.8) [KRA 91]; 5.6 (5.11/6.1) [KAR 97]; 1.9±1.4 [PER 00]
Total acidity (meq/kg)	22.9** (15.8/30.6) [ITA 75]; 39.7 (29.7/57.2) [KRA 91]; 23.0±4.3 (14.3/36.5) [POU 92]; 25.4±5.8 (17.3/39.2) [PER 95A]; 31.3 (28.6/34.1) [KAR 97]; 17.4±4.9 (10.3/24.8) [GOL 99]; 28.4±6.7 [PER 00]; 32.7±10.6 (14.3/53.5) [CEL 01]
Water (g/100 g)	<18 [ITA 75]; (17.8/20.5) [RAV 75]; 19.7 (18.5/21.9) [KRA 91]; 17.6±1.2 (15.3/19.2) [BRU 92]; 16.3±1.1 (14.0/18.8) [POU 92]; 16.1±1.0 (<18) [PER 95A]; 15.2±1.5 (13.0/18.5) [THR 95]; 16.3±0.82 (14.3/18.2) [KAR 97]; 15.8*±0.43 (14.6/16.4) [MAT 98]; 16.6±2.06 (14.5/19.8) [GOL 99]; 15.5±0.9 [PER 00]; 15.6±1.7 (13.0/19.8) [CEL 01]; 17.2±1.2 [DIN 03]
Diastase (DN)	>20 [ITA 75]; 23.2 (8.3/38.5) [KRA 91]; 22.6±6.7 (10.9/34.1) [PER 95A]; 18.5±5.46 (10.4/29.6) [THR 95]; 18.8±4.62 (11.3/35.6) [KAR 97]; 16.5±3.2 (12.3/21.1) [GOL 99]; 23.4±5.8 [PER 00]
Invertase (U/kg)	39.7±8.8 (27.2/58.8) [KAR 97]; 175.5±22.0 (131.5/224.8) [PER 99]; 172.6±28.6 [PER 00]; 223.9±43.5 [DIN 03]
Proline (mg/kg)	606 (387/1113) [KRA 91]; 390±194 (290/580) [THR 95]; 563 (487/608) [FOL 96]; 592±140 (368/840) [KAR 97]; 564.5±23.3 [DIN 03]
Fructose (g/100 g)	37.1*** (33.3/41.5) [ITA 75]; 32.3 (28.3/37.2) [BOG 88]; 34.0 (29.9/35.9) [KRA 91]; 36.8±2.9 (33.2/41.4) [BRU 92]; 31.3±1.8 (28.0/40.2) [POU 92]; 31.8±2.8 (24.5/35.8) [PER 95A]; (32.0/34.8) [IVA 97]; 34.3*±1.1 (32.6/35.9) [MAT 97, MAT 98]; 34.2±2.9 (30.8/37.6) [GOL 99]; 31.5±2.6 [PER 00]
Glucose (g/100 g)	32.3*** (27/35.7) [ITA 75]; 23.9 (19.0/29.5) [BOG 88]; 30.9 (27.9/33.2) [KRA 91]; 31.1±2.5 (26.4/36.0) [BRU 92]; 24.7±1.5 (21.0/29.0) [POU 92]; 24.0±2.2 (18.0/28.6) [PER 95A]; (23.6/26.2) [IVA 97]; 25.8*±1.5 (22.7/28.8) [MAT 97, MAT 98]; 27.7±2.6 (24.2/31.2) [GOL 99]; 24.1±1.8 [PER 00]; (14.1****/29.3) [MAN 01]
Sucrose (g/100 g)	0.64*** (0.10/1.20) [ITA 75]; 0.5 (0.1/1.0) [BOG 88]; 0.98 (0.35/4.41) [KRA 91]; 0.2±0.4 (0.0/1.8) [BRU 92]; 1.0±1.0 (0.1/3.6) [POU 92]; 0.4±0.4 (tr./1.8) [PER 95A]; 0.21*±0.17 (0.02/0.75) [MAT 97, MAT 98]; (0.0/4.8) [BOG 99]; 0.4±0.4 [PER 00]; 2.54±1.9 (0.10/5.69) [CEL 01]
F+G (g/100 g)	67.9 [BRU 92]; 56.0 [POU 92]; 55.8±4.6 (42.5/63.0) [PER 95A]; (57/58.2) [IVA 97]; (45.1/71.8) [BOG 99]; 61.9±4.8 (56.7/67.3) [GOL 99]; 55.7±3.8 [PER 00]
F/G ratio	1.20±0.09 (1.06/1.34) [BRU 92]; 1.28±0.05 (1.14/1.43) [POU 92]; 1.33±0.09 (1.14/1.48) [PER 95A]; (1.22/1.47) [IVA 97]; 1.33*±0.06 (1.22/1.77) [MAT 97, MAT 98]; 1.24±0.09 (1.12/1.33) [GOL 99]; 1.31±0.11 [PER 00]; (1.08****/1.80) [MAN 01]
G/W ratio	1.50±0.12 (1.20/1.72) [PER 95A]; 1.63*±0.10 (1.45/1.77) [MAT 97, MAT 98]; 1.55±0.13 [PER 00]
* honeydew honey of <i>Quercus</i> spp ** pH at equivalent point *** % of dry matter **** honeydew honey of pine and of fir trees	

METCALFA HONEYDEW HONEY

PE/10 g honey	variable, <300,000 [PER 00]
HDE/PG ratio	>3 [PER 00]
Colour (mm Pfund)	98±8 (83/110) [PER 95A]; 102.4±6.8 [PER 00]
Electrical conductivity (mS/cm)	1.64±0.27 (0.96/2.05) [PER 95A]; 1.74±0.19 [PER 00]; 1.92±0.32 (1.26/2.38) [GOL 03]
Specific rotation $[\alpha]_D^{20}$	17±7.4 (2.5/30.0) [PER 95A]; 18.5±6.5 [PER 00]
pH	5.0±0.4 (4.3/5.9) [PER 95A]; 5.1±0.4 [PER 00]; 5.4±0.3 (4.9/6.3) [GOL 03]
Free acidity (meq/kg)	37.2±6.1 [PER 00]; 28.7±4.6 (18.5/38.0) [GOL 03]
Lactones (meq/kg)	4.1±1.3 [PER 00]; 1.6±1.1 (0.0/3.6) [GOL 03]
Total acidity (meq/kg)	40.6±6.6 (25.7/57.7) [PER 95A]; 41.3±6.5 [PER 00]; 30.3±5.1 (18.5/40.8) [GOL 03]
Water (g/100 g)	16±0.8 (<18) [PER 95A]; 15.8±0.7 [PER 00]; 14.7±0.76 (13.5/16.4) [GOL 03]
Diastase (DN)	31.9±9.3 (14.6/62.1) [PER 95A]; 34.2±7.5 [PER 00]; 22.9±7.3 (8.9/42.9) [GOL 03]
Invertase (U/kg)	171.9±17.6 (135.9/206.4) [PER 99]; 172.6±21.3 [PER 00]
Proline (mg/g)	520±170 [PER 00]; 365±100 (200/636) [GOL 03]
Fructose (g/100 g)	31.9±3.3 (25.2/38.8) [PER 95A]; 31.7±3.3 [PER 00]
Glucose (g/100 g)	23.7±2.7 (18.8/29.0) [PER 95A, PER 00]
Sucrose (g/100 g)	0.1±0.1 (tr./0.4) [PER 95A, PER 00]
F+G (g/100 g)	55.6±4.6 (45.5/64.8) [PER 95A]; 55.3±4.7 [PER 00]
F/G ratio	1.36±0.19 (0.87/1.76) [PER 95A]; 1.35±0.19 [PER 00]
G/W ratio	1.48±0.15 (1.22/1.88) [PER 95A]; 1.49±0.16 [PER 00]

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