

15/97	Stingless bee honey from the world 007:	Perú 01
<p> <i>Melipona crinita</i> (n=2) <i>Melipona eburnea</i> (n=1) <i>Melipona grandis</i> (n=5) <i>Melipona illota</i> (n=1) <i>Nannotrigona melanocera</i> (n=1) <i>Partamona epiphytophila</i> (n=1) <i>Ptilotrigona lurida</i> (n=1) <i>Scaptotrigona polystica</i> (n=1) <i>Scaura latitarsis</i> (n=1) <i>Tetragonisca angustula</i> (n=1) </p>		

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Table 1. Stingless bee identification

Nr.	SB species	Author year	Entomologist	Honey samples
1	<i>Melipona crinita</i>	Moure & Kerr, 1950	Camargo JMF USP, Ribeirão Preto, Brasil	11,12
2	<i>Melipona eburnea</i>	Friese, 1900	Camargo JMF USP, Ribeirão Preto, Brasil	2
3	<i>Melipona grandis</i>	Guérin, 1844	Camargo JMF USP, Ribeirão Preto, Brasil	3, 4, 5, 6, 13
4	<i>Melipona illota</i>	Cockerell, 1919	Camargo JMF USP, Ribeirão Preto, Brasil	15
5	<i>Nannotrigona melanocera</i>	Schwarz, 1938	Camargo JMF USP, Ribeirão Preto, Brasil	8
6	<i>Partamona epiphytophila</i>	Pedro & Camargo, 2003	Camargo JMF USP, Ribeirão Preto, Brasil	10
7	<i>Ptilotrigona lurida</i>	Smith, 1854	Camargo JMF USP, Ribeirão Preto, Brasil	14
8	<i>Scaptotrigona polystica</i>	Moure, 1950	Camargo JMF USP, Ribeirão Preto, Brasil	7
9	<i>Scaura latitarsis</i>	Friese, 1900	Camargo JMF USP, Ribeirão Preto, Brasil	1
10	<i>Tetragonisca angustula</i>	Latreille, 1811	Camargo JMF USP, Ribeirão Preto, Brasil	9
11	<i>Apis mellifera</i>	Linnaeus, 1758	-	16

Table 2. Geographical origin of honey samples

Nr.	Date ddmmyy	Location		GPS	Country
1	31/08/02	Tarapoto (San Martín)	NE Tarapoto trail	S06 28/W76 20	Peru
2	10/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	S06 28,819' W76 21,315'	Peru
3	25/08/02	Cuñumbuque (San Martín)		S06 31/W76 29	Peru

4	29/08/02	Tarapoto (San Martín)	towards Loma Linda		Peru
5	11/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
6	11/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
7	10/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
8	11/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
9	11/09/02	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
10	02/10/02	Tarapoto (San Martín)			Peru
11	02/03	Tarapoto (San Martín)	Yurimaguas road	SO6 34 W76 20,950'	Peru
12	02/03	Tarapoto (San Martín)	Yurimaguas road	SO6 34 W76 20,950'	Peru
13	23/03/2003	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
14	09/10/2003	Tarapoto (San Martín)	Yurimaguas	SO6 34 W76 20,950'	Peru
15	29/09/2003	Tarapoto (San Martín)	Meliponario Rasmussen, near Taki-Wasi 386 masl	SO6 28,819' W76 21,315'	Peru
16	02/2003	Lamas (San Martín)			Peru

Table 3. Type of stingless bee management and technology

Nr.	Hive, model	Extraction	Processing	Storage tempearture
1	Termite colony	Syringe suction	Natural	Frozen
2	Box	Syringe suction	Natural	Frozen
3	Log	Syringe suction	Natural	Frozen
4	Log	Syringe suction	Natural	Frozen
5	Box	Syringe suction	Natural	Frozen
6	Box	Syringe suction	Natural	Frozen
7	Box	Syringe suction	Natural	Frozen
8	Box	Syringe suction	Natural	Frozen
9	Kalabash (hollow fruit)	Syringe suction	Natural	Frozen
10	Wall	Syringe suction	Natural	Frozen
11	Tree	Syringe suction	Natural	Frozen

12	Tree	Syringe suction	Natural	Frozen
13	Box	Syringe suction	Natural	Frozen
14	Tree	Syringe suction	Natural	Frozen
15	Log	Syringe suction	Natural	Frozen
16	Tree <i>A. mellifera</i>	Pressed	Natural	Frozen

Table 4. Physicochemical composition
(see method and units in the reference section)

Nr.	SB species	Flavonoids	Nitrites	Polyphenols	Proteins	Water
1	9	17.69	1.13	282.59	1.77	20.8
2	2	8.88	0.65	179.59	1.08	23.8
3	3	2.17	0.28	93.26	0.39	27.4
4	3	4.36	0.35	129.97	0.70	26.2
5	3	1.33	0.19	84.80	0.37	26.3
6	3	3.77	0.39	101.70	0.50	29.2
7	8	17.59	1.15	337.03	1.57	33.0
8	5	31.01	1.46	464.91	2.86	33.4
9	10	18.18	1.07	260.90	1.91	28.9
10	6	5.94	1.26	151.26	0.94	45.8
11	1	6.96	0.39	156.78	1.00	28.2
12	1	7.70	0.35	153.31	1.17	29.3
13	3	4.02	0.52	117.65	0.76	28.6
14	7	23.39	2.88	240.31	1.88	35.2
15	4	2.59	0.30	99.72	0.75	28.0
16	<i>A. mellifera</i>	8.80	0.37	147.06	1.48	20.0
	Method	1	2	3	4	5

Table 5. Sensory evaluation
(see method and units in the reference section)

Nr.	SB species	Color
1	9	150
2	2	103
3	3	23
4	3	42
5	3	14
6	3	32
7	8	150
8	5	150
9	10	150
10	6	78
11	1	92
12	1	83
13	3	81
14	7	150
15	4	26
16	<i>A. mellifera</i>	125
Method		6

Table 6. Bioactivity
(see method and units in the reference section)

Nr.	SB species	Total antioxidant activity
1	9	255.83
2	2	206.03
3	3	96.03
4	3	134.05

5	3	86.37
6	3	110.07
7	8	330.16
8	5	569.65
9	10	327.69
10	6	115.74
11	1	227.63
12	1	247.17
13	3	108.43
14	7	205.71
15	4	93.84
16	<i>A. mellifera</i>	153.87
Method		7

Table 7. Analysts

Analysis	Color	Water	Nitrates	Proteins	Flavonoids	Polyphenols	Total antioxidant activity
Analysts	Vit P		Rodríguez-Malaver AJ		Gutiérrez MG		

REFERENCES

Method	Parameter	Technique	Units
1	Flavonoids	Spectrophotometric ¹	mg quercetin equivalents/100 g honey
2	Nitrites	Spectrophotometric ²	μmol nitrites/100 g honey
3	Polyphenols	Spectrophotometric ³	mg gallic acid equivalents/100 g honey
4	Proteins	Spectrophotometric ⁴	mg proteins/100 g honey
5	Water	Refractometric ⁵	g water/100 g honey
6	Color	Colorimetric ⁶	mm Pfund
7	Total antioxidant activity	Spectrophotometric ⁷	μmol Trolox equivalentes/100 g honey

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