**Electronic Supplementary Information (ESI)**

**A SIMPLE ONE-POT DETERMINATION OF BOTH TOTAL PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF HONEY BY POLYMER CHEMOSENSORS.**

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**S1. Identification of the samples**

**Table S1** shows the codes, or labels, of the eight honey samples used in the present study.

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| **Table S1.** Identification of the eight honeys used in the present study in terms of internal code, origin and botanical origin. |
| **Honey****number** | **Internal code of dilutions for:*** **Reference methods**
* **Sensory colorimetric films**
 | **Geographical origin\*** | **Botanical origin\*\*** |
| **Honey 1** | **HO1** | Castilla y León (SPAIN) | Ling heather |
| **B-HO1** |
| **Honey 2** | **HO2** | Castilla y León (SPAIN) | Honeydew |
| **B-HO2** |
| **Honey 3** | **HO3** | Castilla y León (SPAIN) | Honeydew |
| **B-HO3** |
| **Honey 4** | **HO4** | Castilla y León (SPAIN) | Multifloral |
| **B-HO4** |
| **Honey 5** | **HO5** | Castilla y León (SPAIN) | Multifloral |
| **B-HO5** |
| **Honey 6** | **HO6** | Castilla y León (SPAIN) | Multifloral |
| **B-HO6** |
| **Honey 7** | **HO7** | Castilla y León (SPAIN) | Multifloral |
| **B-HO7** |
| **Honey 8** | **HO8** | Castilla y León (SPAIN) | Multifloral |
| **B-HO8** |
| **\***Honeys were collected from individual apiaries and manufactured by “Abeja Burgalesa”, Soc. Coop.**\*\***Botanical origin of the samples was determined by melissopalinology (Louveaux et al., 1978; Terradillos et al., 1994; Von Der Ohe et al., 2004), and sensory analyses (Marcazzan et al., 2018; Persano Oddo & Piro, 2004; Piana et al., 2004), there being 1 ling heather (*Calluna vulgaris* (L.) Hull) honey, 2 honeydew honeys and 5 multifloral honeys. |

**S2. Titration of sensory colorimetric films with gallic acid**

**Figure S1** shows the RGB parameters obtained from the digital photographs of the discs, after dipping for 2 hours in aqueous basic solutions (NaOH 0.1 M) of gallic acid.

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|  | **mg GA / L** | **R** | **G** | **B** |
|  | 260 | 169 | 170 | 92 |
| 230 | 179 | 172 | 106 |
| 200 | 181 | 178 | 114 |
| 170 | 182 | 179 | 130 |
| 140 | 184 | 184 | 140 |
| 110 | 184 | 178 | 147 |
| 80 | 181 | 178 | 168 |
| 50 | 183 | 176 | 173 |
| **Figure S1.** Titration of sensory colorimetric films with gallic acid. The figure shows 8 mm diameter discs after dipping in aqueous basic solutions (NaOH, 0.1 M) of gallic acid in concentrations ranging from 50 to 260 mg/L. RGB values were obtained from digital images of the discs, using a generic image software.  |

**S3. Folin-Ciocalteu method. Titration with gallic acid.**

Titration of the Folin-Ciocalteu reagent with gallic acid (experimental work-up in caption of **Figure S2**). **Table 2** and **Figure 2** show the experimental results.

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| **Table S2**. Absorbance data at 760 nm of aqueous solutions of ***Folin-Ciocalteau*** reagent in presence of gallic acid in concentrations ranging from 10 to 300 mg/L. |
| **mg GA / L** | **Abs 760nm** |
| 300 | 2.113 |
| 250 | 2.057 |
| 200 | 1.826 |
| 150 | 1.403 |
| 100 | 1.016 |
| 50 | 0.526 |
| 10 | 0.199 |

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| **Figure S2.** Titration of ***Folin-Ciocalteu*** reagent with gallic acid. *Experimental conditions:* a standard solution of gallic acid (300 mg/L) was diluted with water to prepare the samples with concentrations ranging from 10 to 300 mg/L. Once ready, 0.5 mL of each dilution was mixed with 2.5 mL of Folin-Ciocalteu 0.2 N reagent solution. The resulting mixture was homogenized using a tubes agitator (Vortex shaker, VWR) and then, the samples were left at room temperature for 5 minutes and 2 mL of sodium carbonate (75 g/L) was added and the mixture was homogenized again. Finally, the tubes were incubated for two hours in darkness at room temperature and the absorbance of samples was recorded at 760nm using a Hitachi U-3900 UV/Vis spectrophotometer. |

**S4. TEAC method. Titration with trolox.**

Titration of ***ABTS*** radical with trolox (experimental work-up in caption of **Figure S3**). **Table S3** and **Figure S3·** show the experimental results.

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| **Table S3**. Absorbance data at 734 nm and % Inhibition of aqueous solutions of ***ABTS*** radical in presence of trolox in concentrations ranging from 0.5 to 3 mM. |
| **mM trolox** | **Abs 734nm** | **%Inhibition****(100\*(Ab-A6)/Ab)** |
| 0.500 | 0.759 | 1.821 |
| 0.625 | 0.684 | 11.507 |
| 1.000 | 0.632 | 18.213 |
| 1.250 | 0.592 | 23.374 |
| 1.500 | 0.521 | 32.659 |
| 2.000 | 0.442 | 42.780 |
| 2.500 | 0.394 | 49.029 |
| 3.000 | 0.252 | 67.417 |

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| **Figure S3.** Titration of ***ABTS*** radical with trolox. *Experimental conditions:* ***ABTS*** radical is generated by mixingan aqueous solution of ***ABTS*** (7 mM), and K2S2O8 (2.45 mM) aqueous solution. The solution was stirred in darkness for 16-18 h at room temperature. Secondly, 1490 µl of ***ABTS*** reagent was mixed with 10 µl of standard trolox aqueous solutions ranging from 0 to 3 mM, and the absorbance at 734 nm was recorded after 6 minutes (A6) by triplicate. The inhibition percentage of the sample was obtained by the following equation (**100\*(Ab-A6)/Ab**), where **Ab** is the absorbance (734nm) of the sample used as blank and **A6** the absorbance of the mixture of **ABTS** and **Trolox** sample after 6 minutes mixed. |

**S5. B parameters of sensory colorimetric films after dipping in B-HOx solutions.**

B parameters were obtained from digital photographs by using a generic image software.

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| **Table S4**. Value of B parameter of the polymeric sensory discs, after dipping for 2 hours in the different honey solutions at room temperature. |
| **Honey number** | **Honey solution** | **B parameter** |
| 1 | B-HO1 | 67.0±0.9 |
| 2 | B-HO2 | 97.0±0.7 |
| 3 | B-HO3 | 64±1.0 |
| 4 | B-HO4 | 91±2.0 |
| 5 | B-HO5 | 101±1.0 |
| 6 | B-HO6 | 88.0±0.9 |
| 7 | B-HO7 | 76±1.0 |
| 8 | B-HO8 | 95.0±0.9 |

**S6. Schematic procedure followed to quantify TPC and AOX in honey samples by sensory colorimetric films method**.

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| **Figure S5.** Schematic procedure followed to quantify TPC and AOX in real honey samples by the sensory colorimetric films method. |

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