

## Authenticity of Ecuadorian Commercial Honeys

**Authors :** Elisabetta Schievano, Valentina Zuccato, Claudia Finotello, Patricia Vit

**Abstract :** Control of honey frauds is needed in Ecuador to protect bee keepers and consumers because simple syrups and new syrups with eucalyptus are sold as genuine honeys. Authenticity of Ecuadorian commercial honeys was tested with a vortex emulsion consisting on one volume of honey:water (1:1) dilution, and two volumes of diethyl ether. This method allows a separation of phases in one minute to discriminate genuine honeys that form three phase and fake honeys that form two phases; 34 of the 42 honeys analyzed from five provinces of Ecuador were genuine. This was confirmed with  $^1\text{H}$  NMR spectra of honey dilutions in deuterated water with an enhanced aminoacid region with signals for proline, phenylalanine and tyrosine. Classic quality indicators were also tested with this method (sugars, HMF), indicators of fermentation (ethanol, acetic acid), and residues of citric acid used in the syrup manufacture. One of the honeys gave a false positive for genuine, being an admixture of genuine honey with added syrup, evident for the high sucrose. Sensory analysis was the final confirmation to recognize the honey groups studied here, namely honey produced in combs by *Apis mellifera*, fake honey, and honey produced in cerumen pots by *Geotrigona*, *Melipona*, and *Scaptotrigona*. This is a valuable contribution to protect honey consumers, and to develop the beekeeping industry in Ecuador.

**Keywords :** fake, genuine, honey,  $^1\text{H}$  NMR, Ecuador

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