Determination of honey botanical origin: problems and issues

Livia Oddo, Stefan Bogdanov

Apidologie 35 (2004) S2–S3

DOI: 10.1051/apido:2004044

Determination of honey botanical origin: problems and issues

Livia PERSANO ODDO[a]*, Stefan BOGDANOV[b]

[a] Istituto Sperimentale per la Zoologia Agraria, Sezione di Apicoltura, Roma, Italy
[b] Federal Dairy Research Station, Swiss Bee Research Centre, Liebefeld, Switzerland

(Received 20 February 2004; revised 11 May 2004; accepted 17 May 2004)

1. THE WORK OF THE INTERNATIONAL HONEY COMMISSION

The International Honey Commission (IHC) is a network created in 1990, under the umbrella of Apimondia, for the enhancement of knowledge on honey quality and research. The main objective of the work of the IHC is to improve honey analysis methods and to propose new quality criteria.

The commission, chaired by Stefan Bogdanov until 1997, harmonised and compiled the methods of analysis currently used in routine honey control and carried out ring trials for some of them. The new methods for honey analysis were published in an extra issue of Apidologie (Bogdanov et al., 1997), and generated corresponding honey quality criteria (Bogdanov et al., 1999). The results achieved by the IHC were taken into account in the recent revision of the Codex Alimentarius honey standard (Codex Alimentarius, 2001) and of the European Honey Directive (European Commission, 2002).

Since 1998 the IHC has been chaired by Werner von der Ohe (werner.von-der-ohe@laves.niedersachsen.de); Stefan Bogdanov (stefan.bogdanov@alp.admin.ch) is vice-chairman and Peter Martin (honeysci@aol.com) is secretary.

Some working groups are constituted within the IHC, dealing with specific topics, among which "Melissopalynological analysis", chaired by Werner von der Ohe, "Unifloral honeys" and "Sensory analysis", both chaired by Livia Persano Oddo (livia.persano@apicoltura.org).

The results of the work of these groups are reported in the present monograph, where all important issues regarding the European unifloral honeys are discussed.

The commission regularly meets once a year. At the beginning of 2004 there were 46 IHC members from 20 countries. Representatives of other countries are welcome for the future work of the IHC. The current work of the IHC is mirrored at the homepage of the group (http://www.apis.admin.ch/host/honey/introduction.htm).

2. UNIFLORAL HONEYS IN EUROPE

Due to different proportions of the possible sources, nectar and/or honeydew coming from a great variety of plants, no honey is completely the same as another one. This variability could be a handicap, given the market requirement for a consistent product, but when properly managed, it also could represent an opportunity for enhancing honey by offering to the consumer a number of typical products with special characteristics, according to the particular botanical origin. Indeed, unifloral honeys are regarded as a more valuable class of honey, and botanical denominations are widely employed on the European market, often achieving higher prices than honey blends. In countries like Italy, Spain and France almost half of the marketed honey has a botanical denomination. Of course, these denominations should be verifiable, in order to protect the consumer and to preserve the reputation of the denominations.

The international Codex Alimentarius Standard for honey (Codex Alimentarius, 2001) and the European Directive (European Commission, 2002) allow specific denominations for honey produced from

* Corresponding author: livia.persano@apicoltura.org

particular botanical sources, if the product originates essentially from the indicated origin and has the corresponding physicochemical, organoleptic and microscopic characteristics. However, these norms specify some compositional limits for blossom and honeydew honeys, but they do not establish any legal criteria for unifloral honeys, therefore they do not guarantee an efficient control of the denominations.

Some European laboratories have established limits for unifloral honeys, which serve national quality control, but as these limits can vary from country to country, some difficulties may occur in the trade of unifloral honeys. Often, the import of certain unifloral honeys has been rejected because of non-compliance to local limits.

The aim of this monograph is to provide reference methods and standards, as harmonised by the IHC European honey experts, useful for unifloral honeys authentication. Information is given on the main 15 unifloral honeys produced in Europe (Persano Oddo and Piro, pp. S38–S81; Piazza and Persano Oddo, pp. S94–S111). More than one hundred botanical species from which European unifloral honeys can be produced are tabulated and references are given, where the reader can find data on the production and properties of these honeys (Persano Oddo et al., pp. S82–S93). Other contributions show the state of the art on analytical methods: physicochemical (Bogdanov et al., this issue, pp. S4–S17), melissopalynological (Von der Ohe et al., this issue, pp. S18–S25) and sensory (Piana et al., this issue, pp. S26–S37).

3. DIAGNOSIS OF UNIFLORAL HONEYS

It is not easy to define unifloral honeys. There are no references of natural pure unifloral honeys, as bees always forage on different flower species, even if one species predominates; moreover, it is difficult to identify precisely the discrimination point between multifloral and unifloral honeys, and no analysis allows determining the exact percentage of a given nectar in a honey. On the other hand, the overall correspondence to a typical sensory pattern is more important than a fixed percentage of a particular nectar: it was demonstrated that the presence of a small component of a strongly flavoured nectar may easily spoil the sensory characteristics of a light honey, like black locust, while bigger amounts of a light nectar may have no or little effect on a strong flavoured honey (Piana et al., this issue, pp. S26–S37).

The classical approach proposed in this monograph to verify the botanical denomination of single honey samples takes into account all three complementary methods, sensory, melissopalynological and physicochemical: the whole analytical picture of the sample has to fit with the 'reference model' for that botanical origin.

Of course, the '*ideal reference model*' of a unifloral type cannot be the same for everyone, and it is a matter of fact that the same honey may be considered acceptable as unifloral by an analyst and not acceptable by another one. Some honey types can be produced in various countries at different levels of '*uniflorality*', following the major or minor diffusion of the corresponding plant, and this may lead to a slightly different perception, from one country to another, of the *reference model* for that honey type (consequently, also the samples considered for the IHC characterisation work may suffer a certain unavoidable variability, see Persano Oddo and Piro, this issue, pp. S56, S68). The *model* also changes according to possible specific purposes: more restrictive criteria may be adopted, for example, if honey samples are being judged as part of a competition in a honey show, or for a high quality production line.

This classical approach to the diagnosis of unifloral honeys is quite labour intensive and needs specialised personnel for carrying out pollen and sensory analysis, but at present it remains the method of choice. New and promising analytical approaches have already been developed (Bogdanov et al., this issue, pp. S4–S17), however, before these new methods can be used for routine honey control, they should be further developed, tested with a sufficient number of authentic unifloral samples and compared with results obtained through the classical approach.

We hope that users of this monograph can find all information necessary for working on unifloral honeys. The IHC will appreciate all feedback.

REFERENCES

Bogdanov S., and 21 other members of the International Honey Commission (1999) Honey quality, methods of analysis and international regulatory standards: review of the work of the International Honey Comission, Mitt. Lebensm. Hyg. 90, 108–125.

Bogdanov S., Martin P., Lüllmann C. (1997) Harmonised methods of the European honey commission, Apidologie, extra issue, 1–59 (available online at: http://www.apis.admin.ch/host/doc/pdf-honey/IHCmethods_e.pdf).

Codex Alimentarius (2001) Alinorm 41/0: Revised standard for honey, Alinorm 1, 19–26.

European Commission (2002) Council Directive 2001/110/CE concerning honey, Official J. Eur. Communities Jan 12th 2002, L10/47-52.