



UNIFLORAL HONEYS AS AROMATIC REFERENCES FOR HONEY WHEEL

History

- First steps – Descriptive approach
 - ▣ Topic : to give attributes and terms to characterize different honeys
 - ▣ French M. Gonnet & Vache were the first (1979, 85, 92, 98), left by Italians (Persano Oddo et al. 1995, 2000, INA 1999...)
 - ▣ Used for the evaluation of quality of unifloral honeys
 - ▣ Problem of vocabulary (ambiguous, local...)
 - ▣ Asked a panel trained by type of honey

History

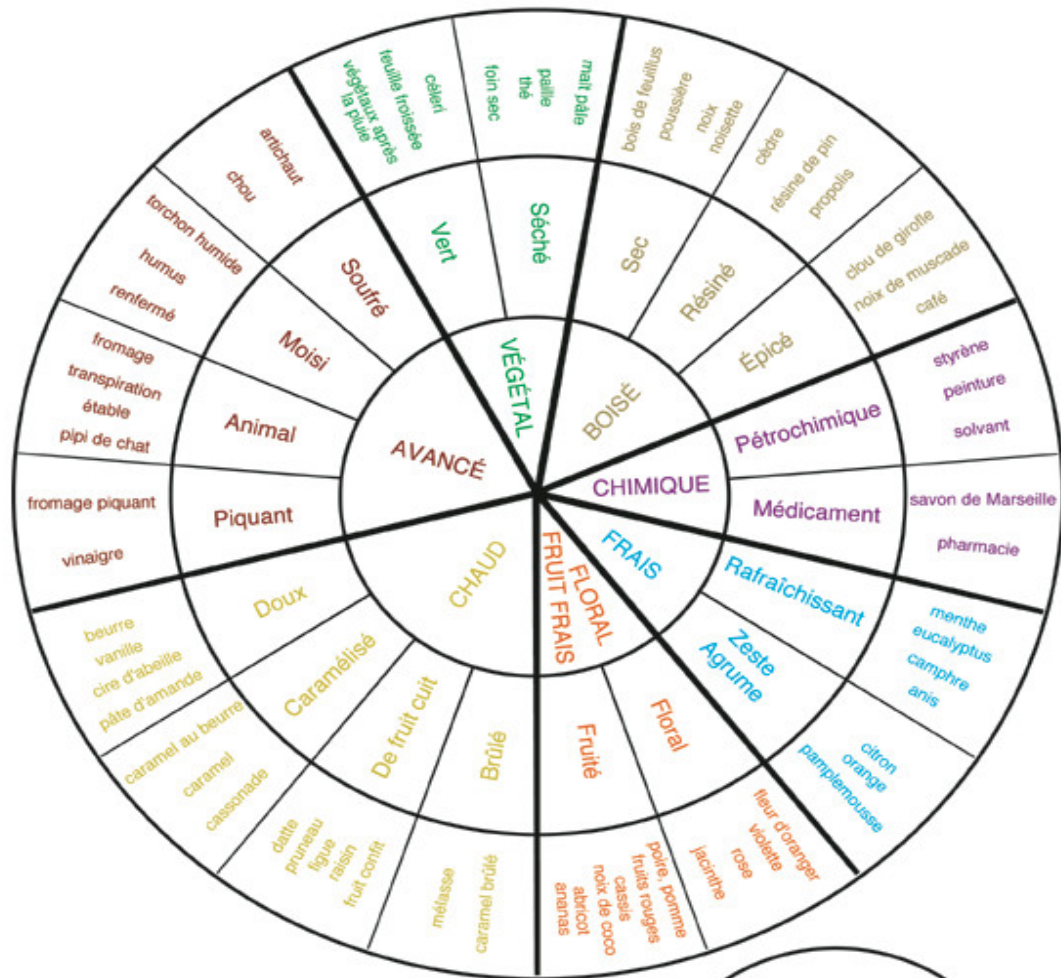
- Second step: Honey wheel
 - ▣ Topic: to give the aromatic profile of a honey based on the classes or subclasses of aromas which are present
 - ▣ CARL team with C. Guyot & E. Bruneau was the first to develop this honey wheel (2000)
 - to allow the easy characterization of honeys “all flower” and of honey not yet describe by the descriptive approach
 - To develop a non-ambiguous (one name, one aromatic reference) and easily understandable common language

History

- Construct the Honey wheel
 - ▣ First, we analyze different European honeys to generate a lot of aromatic descriptors (→ 150)
 - ▣ This list can explain just a part of the aromas present (More than 600 volatile compounds in 3 Chilean honeys)
 - ▣ The number of references was too important to train a panel.
 - ▣ We decided to group them into classes and subclasses with illustrative descriptors or references
 - ▣ We dropped to differentiate head, body and tail aromas (too complex)
 - ▣ When the aromas are light, it's very difficult to define a reference or even a subclass.

ROUE DES ODEURS ET ARÔMES DES MIELS

History



Arômes et sensations EXOGENES



History

- We organized with Lucia Piana a meeting to present and improve our work with our European colleagues specialized in organoleptic tests
- Lucia Piana did the connection between the wheel and the descriptors used by the conventional technique.
- Publication in Apidologie

History

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Sensory analysis applied to honey: state of the art¹

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History – odor and aroma wheel

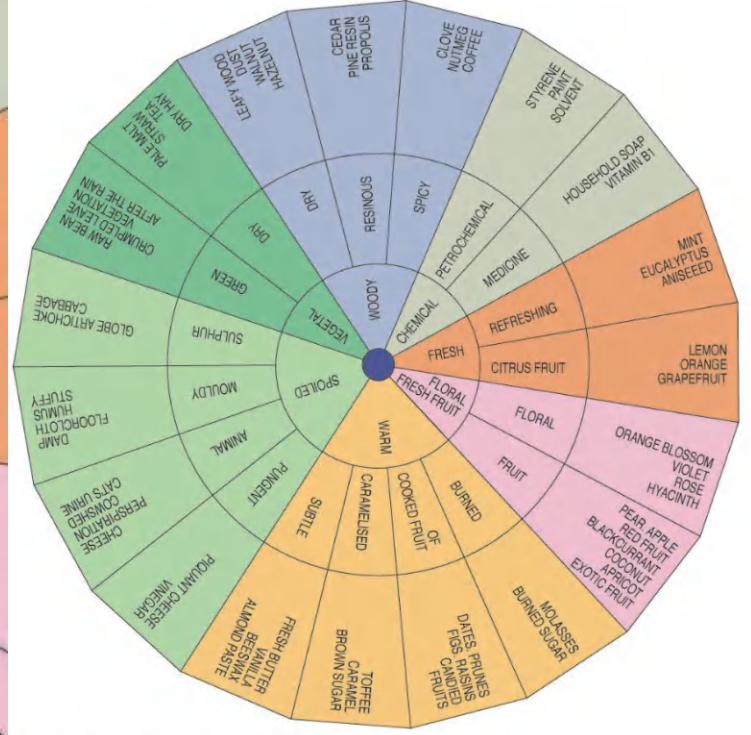
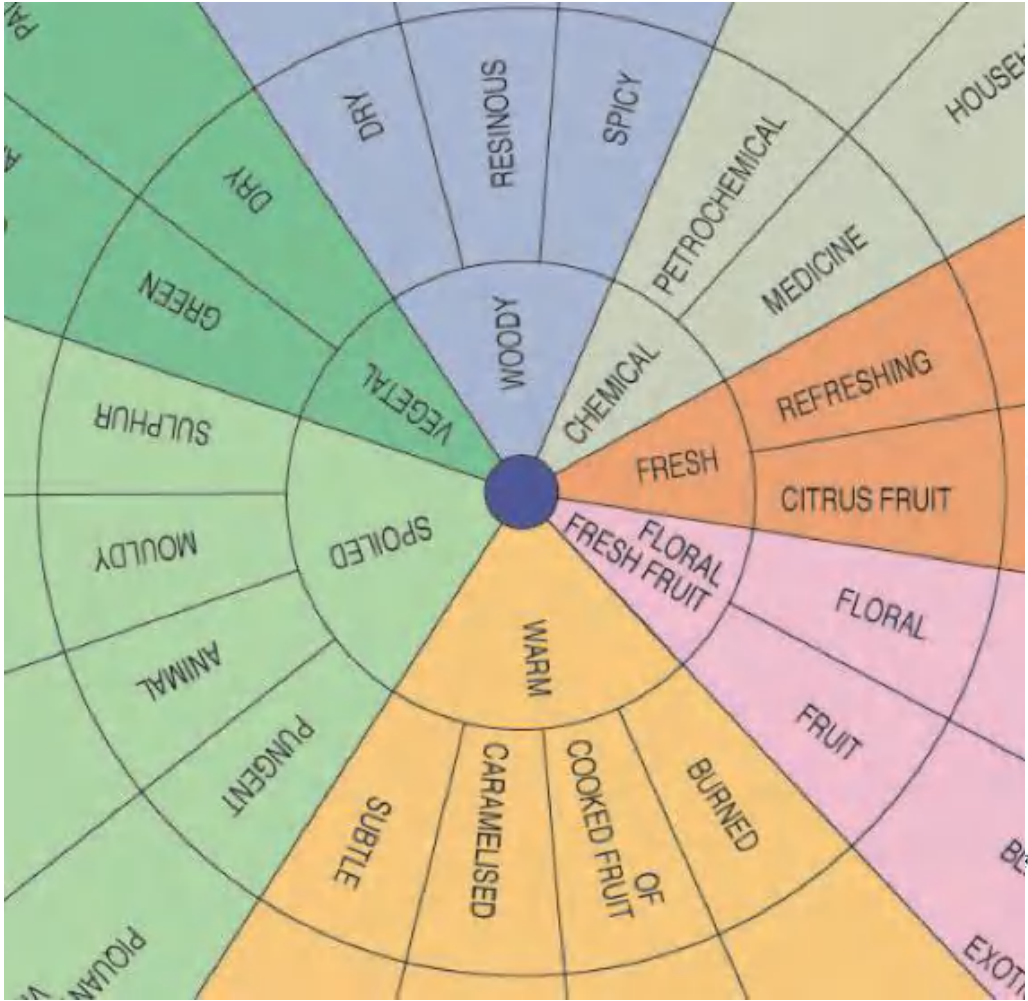
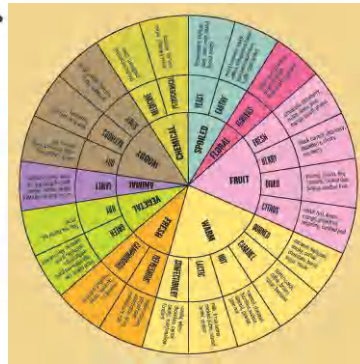


Figure 2. Odour and aroma wheel (IHC, 2001a).

New developments

- 15 years of use → new adaptations of the wheel
 - ▣ To take into account some aromas more present in exotic honeys and in honeydews
 - ▣ To try to harmonize different wheels developed by other laboratories (organoleptic group of IHC)
 - ▣ To solve some common problems when using the wheel
 - spicy out of place in vegetal
 - confusion between cooked fruit and fruit
 - ...

Rueda de Cata de Mielles Exóticas del Istmo



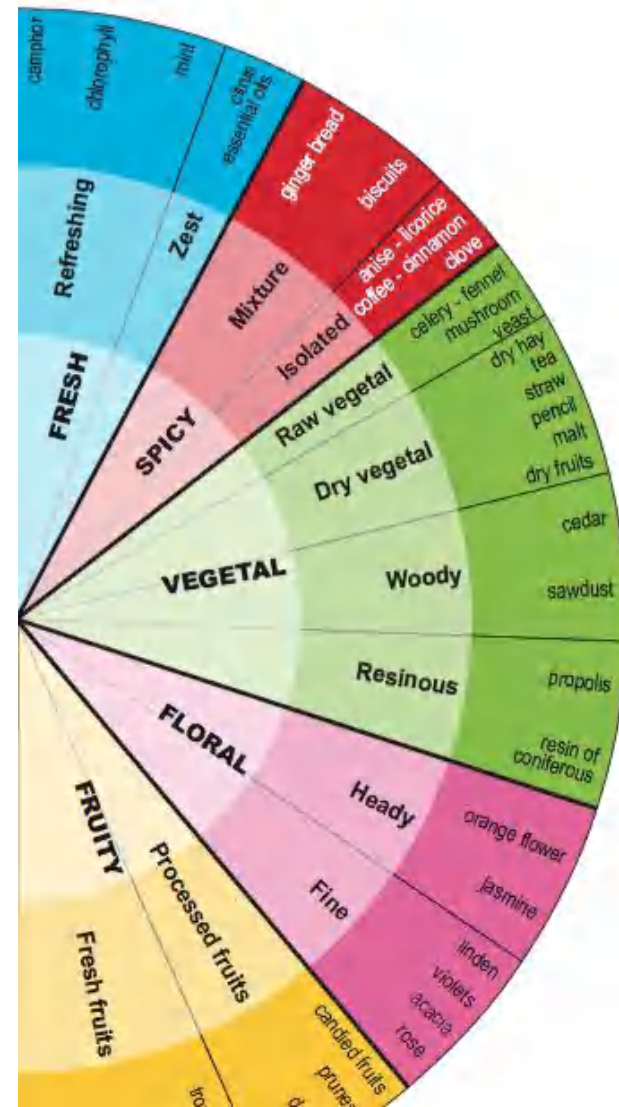


New developments

- Initially, we worked with intensity scales ranging from 0 to 9
 - ▣ → Misuse of the scale of values
- Today we work with a dual scale
 - ▣ The overall intensity aromas of honey is classified as discreet (1), medium (2) or high (3)
 - ▣ Each class of flavours can be:
 - Absent = 0
 - Little present or difficult to perceive = 1
 - Well represented (is the base) = 2
 - Dominant = 3

Honey wheel and references

- Topic: evaluation of the type and intensity of each aromatic classes (subclasses) to produce a complete profile of honeys
- 8 classes easily distinguishable
- Each class contain two or more subclasses
- Each subclass contain a great number of references which are generally used as descriptor to illustrate the classification.
- These references are just there to fix the limits of the subclasses.



Honey wheel and references

- 2 different approaches to learn the classification of the wheel:
 - ▣ Using specific (chemical...) references for each descriptor present in the wheel.
 - This approach is developed by the IHC organoleptic group.
 - Difficulty to find the good reference and all the aromas present in honeys.
 - Allow the ability of persons to detect and quantify some specific aromas and to fix limits for unifloral honeys.
 - ▣ Using honeys in which the class is well represented as references.

Honeys as references

- To be used as reference, unifloral honey
 - ▣ must have a specific profile.
 - ▣ must not be too complex.
- In honey, illustrated aromatic classes or subclasses can be:
 - ▣ Dominant (3). Perfect case but not so common.
 - ▣ Medium (2) Honey with simple aromatic profile in which the class or subclasses can be easily detected.
 - ▣ Little present (1) if the aroma to illustrate can be easily detected in the honey. This subclass of aromas are only present at this level in honeys (fat, musty, sour, raw vegetal).

Honeys as references

□ Class « Warm »

□ Sweet

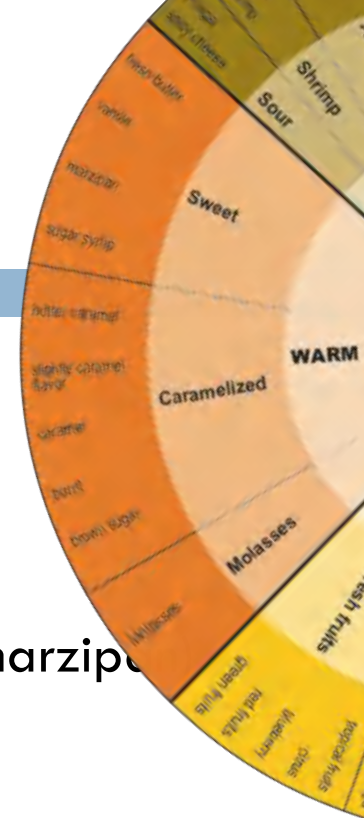
- Fresh butter, vanilla, marzipan, sugar syrup
- Ref.: robinia pseudo acacia (sugar syrup), lavender (marzipan)

□ Caramelized

- Butter caramel, slightly caramel flavour, brown sugar
- Ref.: hawthorn - *Crataegus* (butter caramel), buckthorn - *Fagopyrum* (caramel), eucalyptus (brown sugar), cotton - *Gossypium*

□ Molasses

- Ref.: metcalfa...



Honeys as references

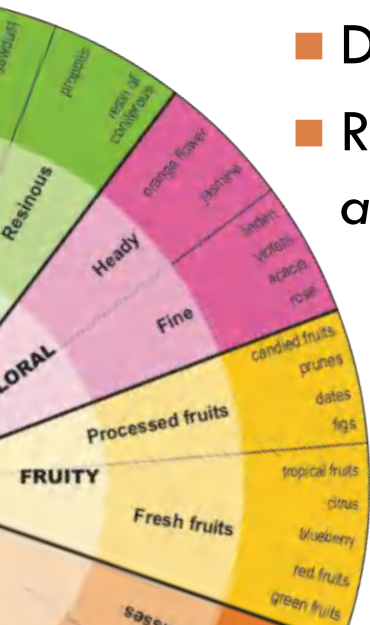
□ Class "Fruity"

▣ Fresh fruits

- Tropical fruits, citrus, blueberry, red fruits, green fruits...
- Ex: Blackberry - *Rubus* (red fruits), evodia (cassis), litchi...

▣ Processed fruits

- Dates, dry figs, plums, candied fruits...
- Ref.: metcalfa, oak - *Quercus* honeydew, avocado – *Persea americana*



Honeys as references

□ Class "Floral"

□ Floral **fine**

- Violets, roses, acacia...
- Ex: lavender, *Robinier pseudo acacia*

□ Floral **heady**

- Orange flower, Jacinth...
- Ref.: citrus honey (orange)



Honeys as references

□ Class "Vegetal"

□ Raw vegetal

- Celery, fennel, raw mushroom, yeast
- Ref.: Some tropical honeydew (botanical origin unknown)

□ Dry vegetal

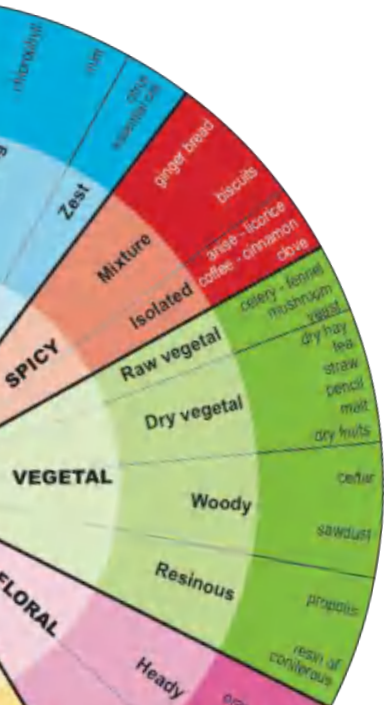
- Dry hay, tea, straw, pencil, malt, dry fruits
- Ref.: Lavender – *Lavendula* (lavender straw), clover – *Trifolium* & alfalfa - *Medicago* (dry hay)

□ Woody

- sawdust, cedar
- Ex: Brazilian pepper – *Schinus terebinthifolius* (exotic wood), oak honeydew

□ Resinous

- Resin of coniferous, propolis
- Ex: resinous honeydew like fir - *Abies* honey



Honeys as references

□ Class "Spicy"

□ Mixture

- Ginger bread, spicy biscuit
- Ex. : white heather – *Erica arborea*, Brazillian pepper

□ Isolated

- Cloves, nutmeg, cinnamon, coffee
- Ref.: African honey (botanical origin unknown)...



Honeys as references

□ Class "Fresh"

□ Refreshing

- Mint, chlorophyll, camphor
- Ref.: Linden - *Tilia* (mint)

□ Zest

- Lemon oil, orange oil, grapefruit oil...
- Ref.: present in some multifloral honeys (botanical origin not determined)



Honeys as references

□ Class "Chemical"

□ **Medicine**

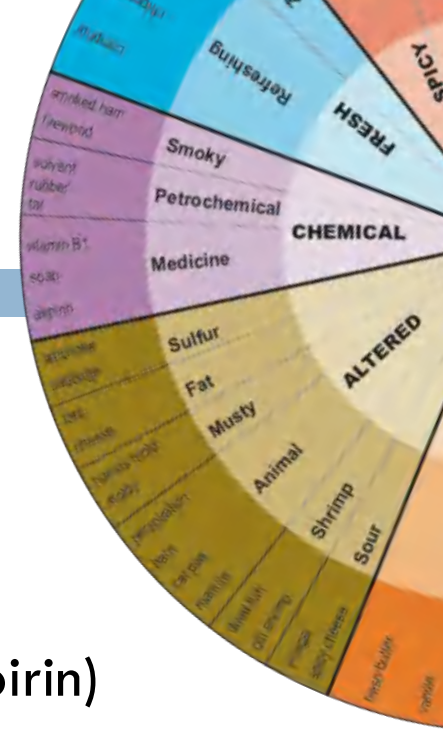
- vitamin B1 (old pharmacy), soap, aspirin...
- Ref.: Linden (vit. B1), willow – *Salix caprea* (aspirin)

□ **Petrochemical**

- Solvent, rubber, tar, styrene ...
- Ref.: thyme - *Thymus*, tropical honey (botanical origin not determined)

□ **Smoky** (≠ smoke → exogenous)

- Smoked ham, firewood



Honeys as references

□ Class "Altered"

□ Sulfur

- Artichoke, cabbage
- Ref.: rape – *Brassica napus* (cabbage)

□ Fat

- Lard, cheese
- Ref.: sunflower – *Helianthus annuus* (lard)

□ Musty

- Humus mold, moldy
- Ref.: some multifloral honey (botanical origin not determined)



Honeys as references

□ Classe "Altered"

■ Animal

- Perspiration barn cat pee
- Ref.: Buckwheat – *Fagopyrum esculentum* (stable), dandelion - *Taraxacum* (cat pee)

■ Shrimp

- Dried fish, old shrimp
- Ref.: some honeydew, carrot – *Daucus carota*

■ Sour

- Vinegar, pungent cheese
- Ref.: some tropical honeydew



Honeys as references

- Overall intensity of aromas:
 - ▣ 1 = Discreet: acacia, rape, rhododendron, vetch (vicia)...
 - ▣ 2 = Medium: lavender, citrus, blackberries, eucalyptus, cotton, dandelion...
 - ▣ 3 = High: heather, chestnut, oak honeydew, avocado, arbutus

Honeys as references

- Few honey can be used as reference.
- Some references are not covered for now.
- We would be very happy to count on your cooperation to complete this reference list honeys with monofloral honeys that you could send us.
- Our laboratory:



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