

STUDY OF THE PERCEPTION OF A LIQUID AND TRANSLUCENT HONEY AND CREAMED HONEY IN FRANCE

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Honey has a tendency to crystallize rapidly after extraction. Since 2007, APINOV engineering company is developing a method which aim is to separate raw honey in two phases : **one remaining permanently liquid and translucent, the other creamy and enriched with sugar crystals**. In 2011, a market study conducted on a panel of 722 consumers showed that 50% of respondents preferred eating honey in liquid form and 50% in creamed form [1]. Until now, no comparative sensory analysis has been made between the liquid honey and creamed honey. Thanks to a jury of amateur tasters, objectives of this sensory study are the followings:



- To study if judges perceived a significant difference of **sweet taste** between raw, creamed and liquid honey.
- To compare subjects assessment for honey under various forms (raw, liquid, creamed) for **5 visual and gustatory descriptors**: color, consistency aspect, mouth feel, product global taste and overall assessment.

Honey: sunflower honey from « la miellerie des Fontenelles », Vendée, France ; treated in the ONIRIS laboratory by the Honey Split Process (HSP) [2].

Panel: 60 people*, 70% women and 30% men ; 67% between 18 and 25 years old, 15% between 26 and 35 years old, 2% between 36 and 45 years old, 10% between 46 and 65 years old.

Analysis: seven sessions of 45min each in the ONIRIS sensory analysis room, on January 27th 2012.

*minimal number of participants needed to ensure statistical validity of the study according to the French norm AFNOR XP V09-501

Test 1: Ranking test

The three products (raw honey, creamed honey and liquid honey) were diluted (ten percent of honey in water) and randomly presented to the panel. Subjects were asked to rank samples from the least to the most sweetened.

Test 2: Hedonic test

Five descriptors were tested for each of the three samples and graded on an open scale. First, two visual descriptors: **color** and **consistency** ; then, two gustatory descriptors: **taste** and **mouth feel** ; finally **global assessment**.

The ranking test for the sweet flavor :

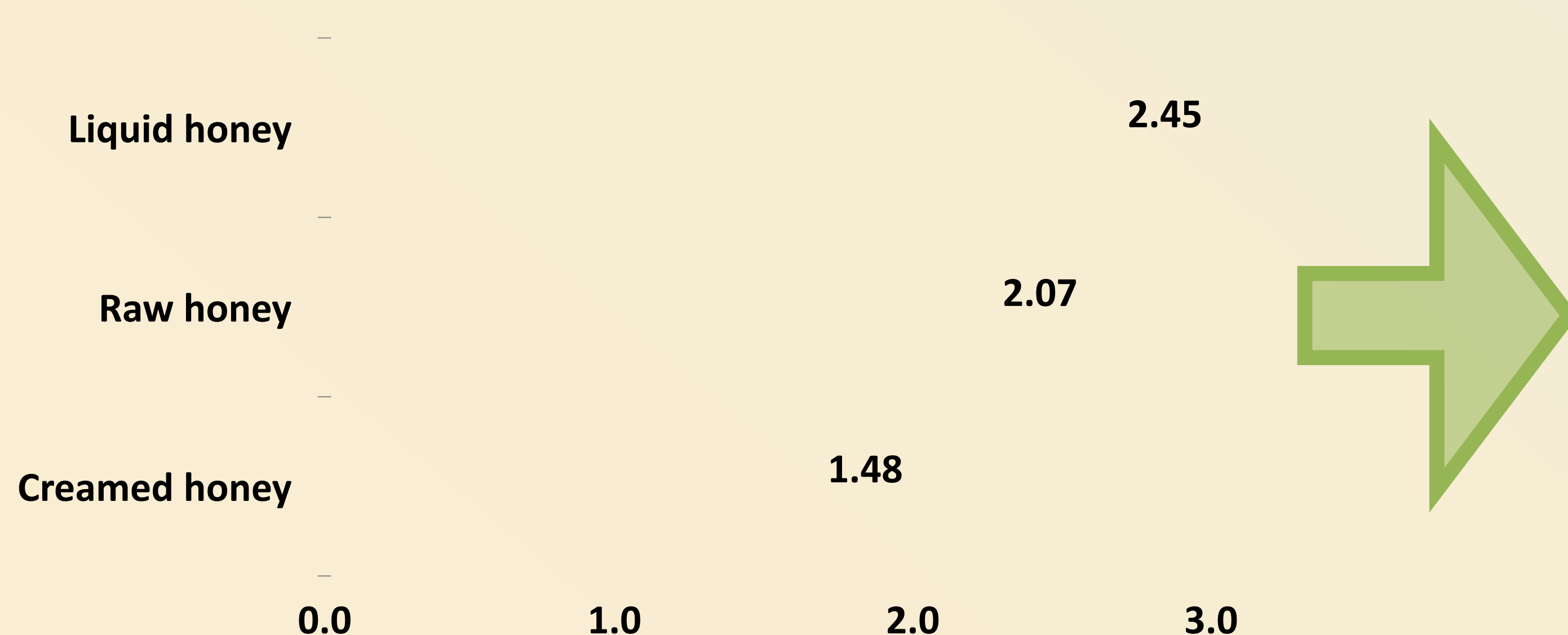


Fig. 1 : ranking test average results for each product

First test enabled to organize the different products into a hierarchy depending on their sweet taste. It appears that creamed honey sweet taste is ranked significantly lower than for raw and liquid honey. However, the difference of sweetness between raw and liquid honey is not significant. The difference of sweetening power induced by the process is significantly perceived by consumers between creamy and liquid phases. Nevertheless, liquid phase composition remains close to initial product since the difference is not significant between these two products.

The hedonic test:

Hedonic test showed that for all descriptors, the product effect is not significant: subjects had no preference for any product. Therefore, difference of texture or sweet flavor highlighted in the first test does not seem to have any influence on the product assessment by consumers regarding evaluated descriptors*.

*Analysis of variance (ANOVA), Two-factor without repetition

| Descriptors | Fisher's theoretical coefficient | Fisher's coefficient | Effect |
|-------------------|----------------------------------|----------------------|----------|
| Color | 3.07 | 1.36 | Negative |
| Consistency | | 1.87 | Negative |
| Mouth feel | | 0.30 | Negative |
| Taste | | 0.13 | Negative |
| Global Assessment | | 0.25 | Negative |

Fig.2 : Product effects of the five descriptors

The hedonic test did not show any significant difference concerning the whole descriptors submitted to the judgment of participants. Therefore, there is no product alteration for the sensory descriptors studied whatever the tested phase was. The process developed by APINOV company does not affect the product from a sensory aspect, neither the attraction for the product from the consumer's point of view. Finally, the analysis here explained was based on a spoon consumption. And yet, market study showed that main honey consumption was not on spoon (only 34% of respondents). Consumption on a slice of bread would be more representative of consumption trends (60% of respondents) [1] but could also possibly promote honey consumption in liquid form: easier use than a less fluid honey.

[1] Meneau C. (2011) Etude de consommation du miel en France. Etude de marché, rapport interne APINOV, 18 pages.

[2] Poirot B. (2011) Procédé de traitement du miel pour obtenir un miel liquide et limpide. Brevet n°EP 2 294 929 déposé auprès de l'Institut National de la Propriété Industrielle (INPI).