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Organic **CERTIFIED** honey bee products from the
Galician Mountains

Properties & Quality specifications from the Galician Honeys & Pollen



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The honeys from TOCA range are only sourced from our organic farm based in the province of Lugo, eastern Galicia. Our company is registered under a “Quality Geographical Indication” which regulates the quality specifications from our products. The requirements from our geographical indication are more restrictive than the current European legislation for the honey quality measurements.

1- Physicochemical requirements under the GI “Galician Honey”

- **Humidity:** < 18%
- **Diastase activity:** > 15 U Ghote
- **HMF (Hydroxymethylfurfural):** < 25 mg/Kg

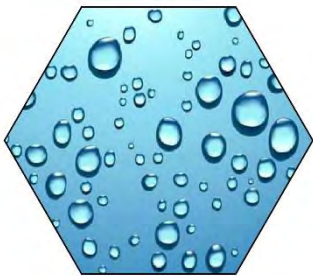
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Why is important to control the humidity from honey?

The water content of honey (water-in-honey) is the quality aspect that determines the ability of honey to remain fresh and to avoid spoilage by yeast fermentation. Raw honey can have a water-in-honey content of less than 14% and the lower the water content the higher the perceived value of the honey. It is internationally recognized that good quality honey should be processed at less than 20% water content

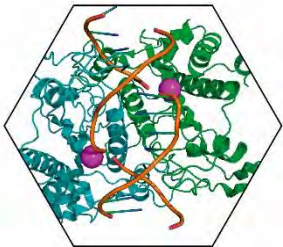
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What is the diastase activity?

The diastase facilitates conversion of starch to maltose and is added by bees during honey production. The activity of diastase in honey is affected by storage and is sensitive to temperature increase and can thus be used as an indicator of storage time/freshness and controls during processing of the honey (HMF content is also used as an indicator of honey quality). Although natural levels are variable in honeys depending on floral source, a reduction in diastase activity from what is expected is a useful quality indicator. Legislation has set a minimum level for diastase activity; it should not be less than 8 U Ghote units.

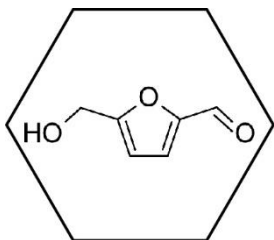
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Why are the HMF (Hydroxymethylfurfural) levels important?

Hydroxymethylfurfural (HMF), also 5-(Hydroxymethyl)furfural, is an organic compound derived from dehydration of certain sugars.

Fresh natural honey can have varying levels of HMF. In the hive honey would normally be below 1 mg/kg but levels soon start to rise with ambient temperatures above 20°C. It is usual for HMF to be below 10 mg/kg in fresh extracted honey. Levels higher than this may indicate excessive heating during the extraction process. The international food standards requires that the hydroxymethylfurfural content of honey shall not be more than 40 mg/kg.

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2- The floral and pollen spectrums from the Galician Honeys and its properties

The pollen spectrum considered as a whole must be typical from the Galician flowers.
It may content a representative percentage from the following flowers:

- **Thyme:** one of the honeys with more potent tonic and antiseptic properties
- **Heather:** is specially rich in iron and it has strong anti-inflammatory and diuretic properties. It's very good to treat anemia due to of its rich content in minerals.
- **Bramble:** effective against infections of the throat. Very aromatic in taste.
- **Chestnut:** chestnut honey has specific stimulating effects for circulation due to of it's very rich in minerals like potassium & magnesium
- **Eucalyptus:** excellent for treating everything related to respiratory problems and healing properties against common bacteria because of the content from "Eucalyptol" as an "active ingredient"

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Some particular important components from the Galician Honeys



A- Thymol in honey made from Thyme

Thymol is part of a naturally occurring class of compounds known as biocides, with strong antimicrobial attributes when used alone or with other biocides such as carvacrol. In addition, naturally occurring biocidal agents such as thymol can reduce bacterial resistance to common drugs such as penicillin. Numerous studies have demonstrated the antimicrobial effects of thymol, ranging from inducing antibiotic susceptibility in drug-resistant pathogens to powerful antioxidant properties. Research demonstrates that naturally occurring biocides such as thymol and carvacrol reduce bacterial resistance to antibiotics through a synergistic effect.

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B- Eucalyptol

Eucalyptol is directly found into the natural unprocessed Eucalyptus honey. Eucalyptol is a natural organic compound that is a colorless liquid. It's able to eliminate microorganisms causing diseases. It has been found that the application of essential oils on cultures of microorganisms as important as Staphylococci.

Also "*Prebiotic*" properties have been found in Eucalyptus honey. A group of Australian researchers have shown that Eucalyptus honey helps to stimulate the growth of gut bacteria (lactobacilli and bifid bacteria) that contribute to human health and reducing the growth of deleterious gut bacteria. [1]

1- See the complete document: <https://rirdc.infoservices.com.au/items/13-123>

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C- Heather healing properties, the LAB symbionts viability.

It has been discovered [2] that 13 LAB symbionts from the honey stomach of honeybees are found in large concentrations in fresh honey as well as having a wide spectrum of antimicrobial activity against various bee pathogens and bacteria and yeasts from flowers. It's hypothesized that many of the unknown healing and antimicrobial properties of honey are linked with these LAB symbionts. In the case of heather, the LAB symbionts are more likely to survive once the honey was harvested due to the highest content in water from the heather honey. **However, completely raw and unprocessed honeys might be more likely to preserve the healing properties that LAB symbionts give them.**

2 - See the complete document: <http://onlinelibrary.wiley.com/doi/10.1111/iwj.12345/pdf>

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D- The propolis

The propolis is probably the most high active component made from honey bees with antibacterial properties.

It's a vegetal resinous substance that bees harvest on some trees and to which they add wax and saliva in order to be able to manipulate it.

- **More than 300 are already identified**

Flavonoids, Pinocembrin, Pinobanksin, Chrysin, Apigenin, Galangin, Kaempferol , ...

- **Others phenolic compounds**

Aromatic acids, Esters of aromatic acids

- **Their benefits**

Antibacterial, fungicidal, antiviral, anti-inflammatory

Local anesthetic

Helps the immune system

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3- The Galician chestnut bee pollen characteristics

The chestnut bee pollen variety that our honey bees gather at the Galician Mountains.

Composition of pollen

- All the essential amino acids
- All the Vitamins
- Fibers : 20%
- Lacto ferments along to bacillus family from the bee

While preserving the same high nutritious properties like the rest of the bee pollens, chestnut variety is the richest pollen in antioxidants. It can be seen on the next page graphic where a list of “healthy ingredients” are analyzed about their antioxidant properties. Also, the chestnut bee pollen is specially rich on the B Vitamins group and it is a very important source of dietary fiber and lacto ferments. It may has similar properties than the lactic bacteria in yogurts helping to preserve a good intestinal flora.

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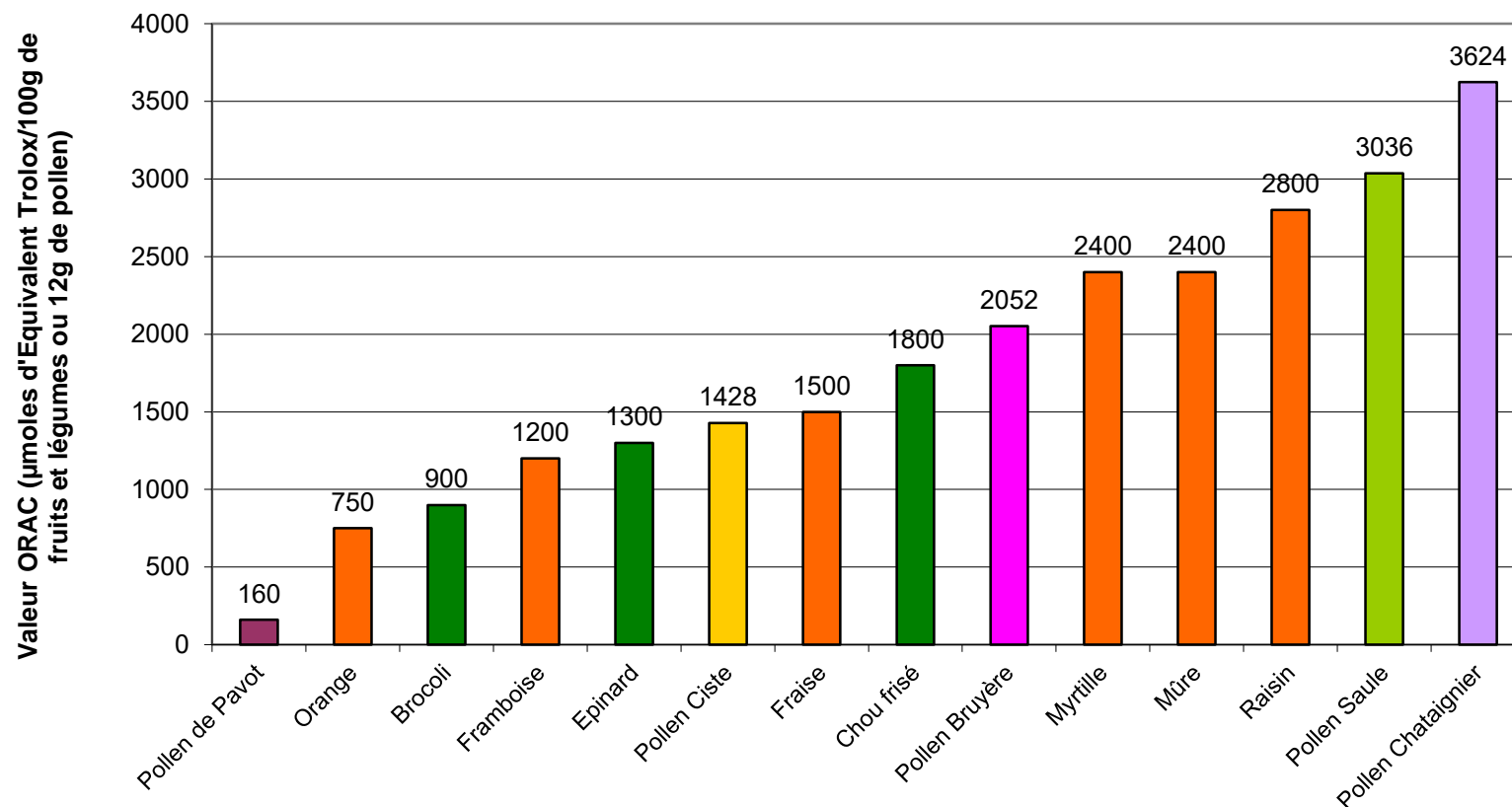
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Scientific Bibliography

Scientific Essays consulted to write this introduction to the remarkable properties from the organic Galician Honeys

- DR JOAN DAWES, ET. AL., *Value-adding to honey*, Publication No. 13/123, Project No. PRJ-005590. Rural Industries Research and Development Corporation.
- TOBIAS C OLOFSSON ET AL., *Lactic acid bacterial symbionts in honeybees – an unknown key to honey's antimicrobial and therapeutic activities*. International Wound Journal ISSN 1742-4801

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