



**Is color of honey related to high polyphenolic content and its bioactive properties ? Case study:
Fallopia japonica honey from Romania**

**Culoarea mierii de albine este legată de conținutul ridicat de polifenoli și de proprietățile ei bioactive?
Studiu de caz privind mierea de *Fallopia japonica* din România**

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State of the Art

Fallopia japonica



State of the Art

Fallopia baldschuanica



Familie:

Deutscher Name:

Pollengröße:

Pollenklasse:

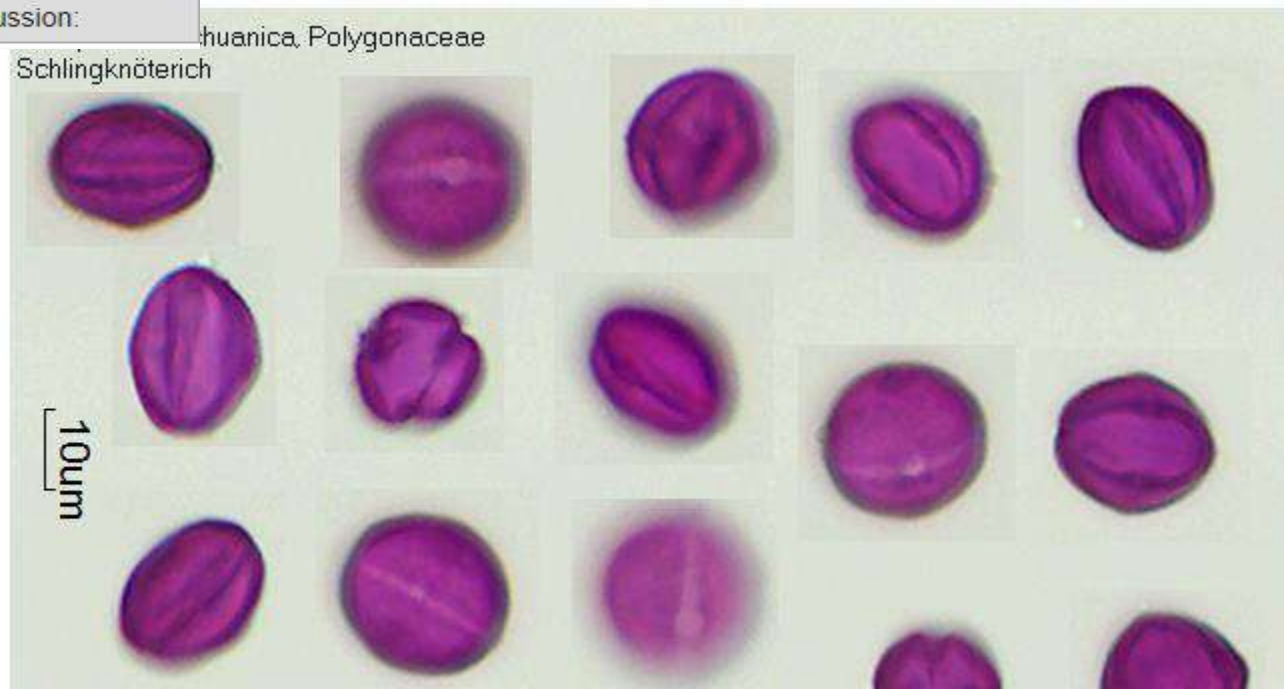
Pollen:

Präparatenummer:

Diskussion:

baldschuanica, Polygonaceae

Schlingknöterich



State of the Art



USES

Japanese Knotweed Resveratrol is an antioxidant compound found along many other compounds in Knotweed.

How to Cure Lyme Disease Naturally

With
JAPANESE KNOTWEED



MONTANA FARMACY
LIQUID HERBAL EXTRACT

JAPANESE KNOTWEED
Herbal Supplement
Net Weight 1 ounces

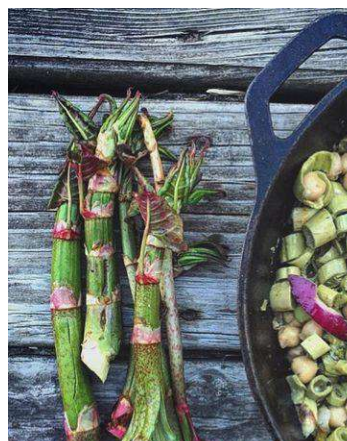
KEEP OUT OF REACH OF CHILDREN

| Supplement Facts | |
|--|-----|
| Serving Size: 0.7 ML Servings: approx 42 | |
| Amount Per Serving | %DV |
| Japanese Knotweed (Fallopia japonica) | ‡ |
| ‡ Daily Value (DV) Not established | |

Other Ingredients:
Organic Cane Alcohol, water. Ratio 1:5 60-70%
Shake Well before Using
Do NOT use if you are taking blood thinners, or prior to surgery

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IF YOU CAN'T BEAT IT, EAT IT !!!



Fallopia japonica honey



Romanian *Fallopia* honey



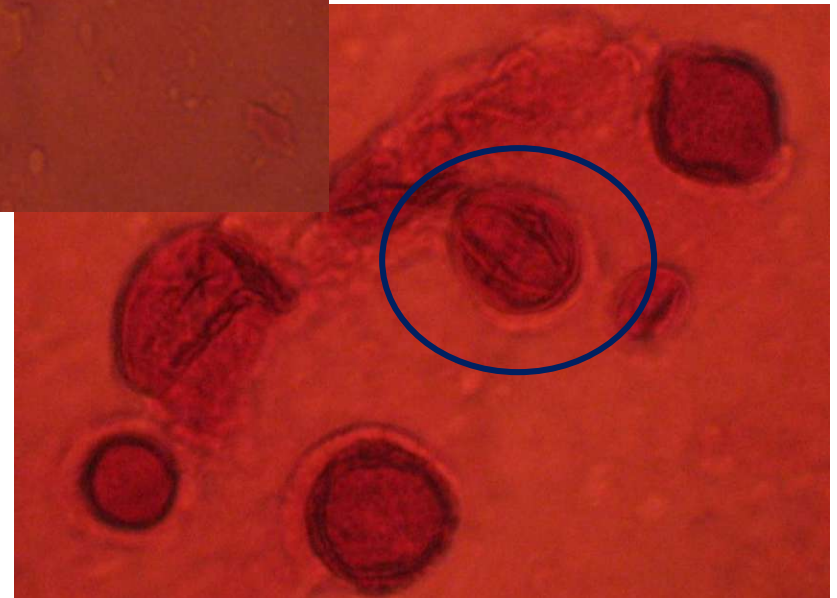
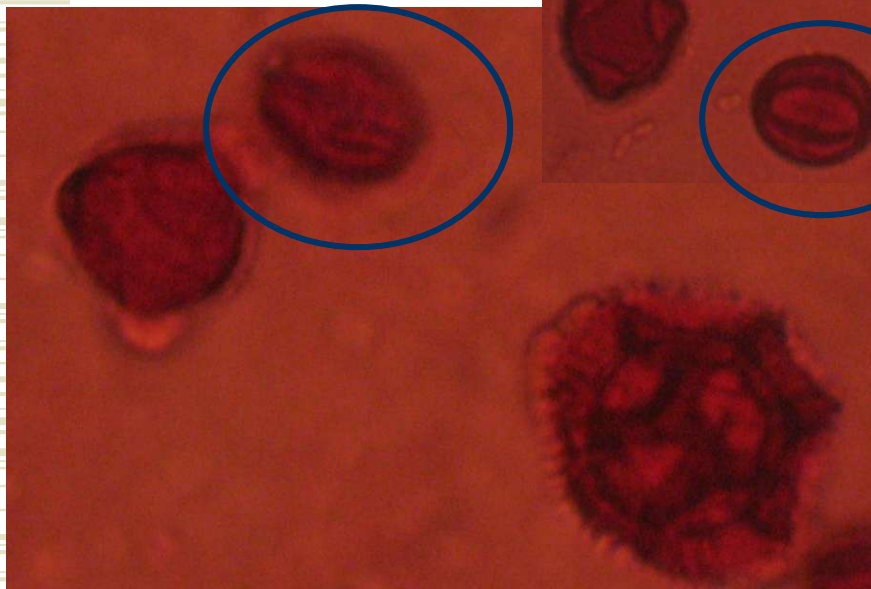
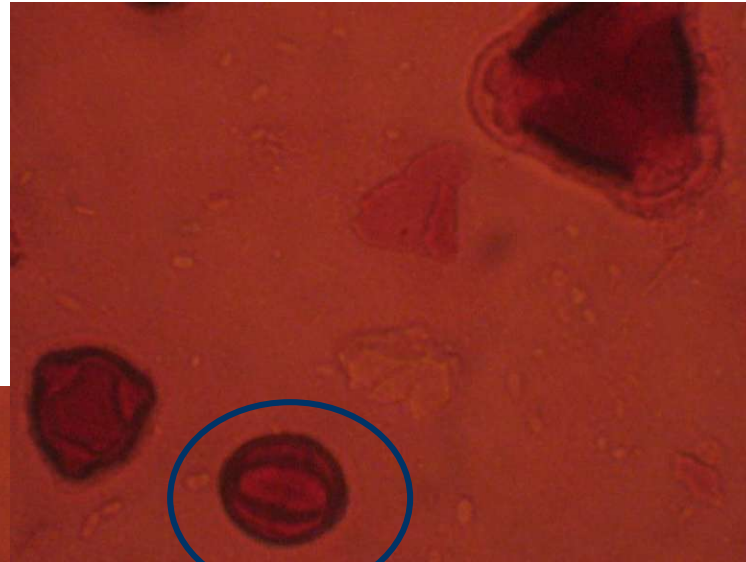
Foto: Marius Mada

Material and methods:

- 3 *Fallopia japonica* honey samples
- 3 Honeydew honey samples

- Palynologic analysis of honey to determine the uniflorality
- Physico - chemical parameters according to standardized methods
- Total phenolic content, flavone content and total flavonoids
- HPLC-PDA analysis of individual phenolic acids and flavonoids
- Antioxidant activity – Spectrophotometric methods
- Antibacterial activity - Inhibition zone measurement

Results: Palynology



Results: Composition

| Honey sample | Water (%) | Electrical conductivity (mS/cm) | Diastasic index (DN) | HMF (mg/kg) | Ash (%) |
|--------------|-----------|---------------------------------|----------------------|-------------|---------|
| Fallopia 1 | 18.9 | 0.697 | 13.34 | 9.93 | 0.32 |
| Fallopia 2 | 20.0 | 0.647 | 11.52 | 0.39 | 0.29 |
| Fallopia 3 | 15.6 | 0.541 | 18.74 | 2.54 | 0.23 |
| Honeydew 1 | 20.3 | 1.080 | 27.44 | 2.91 | 0.54 |
| Honeydew 2 | 17.4 | 1.770 | 40.90 | 5.81 | 0.93 |
| Honeydew 3 | 17.0 | 0.843 | 23.42 | 8.72 | 0.40 |

Results: Sugar Composition

| Honey sample | Fructose | Glucose | F/G ratio | Sucrose | Turanose | Maltose | Trehalose | Erlose |
|--------------|----------|---------|-----------|---------|----------|---------|-----------|--------|
| Fallopia 1 | 39.83 | 31.48 | 1.2 | 0.29 | 1.29 | 1.96 | 0.44 | 0.13 |
| Fallopia 2 | 38.91 | 29.30 | 1.3 | 3.18 | 1.08 | 1.36 | 0.27 | 0.22 |
| Fallopia 3 | 38.90 | 35.24 | 1.1 | 0.67 | 0.74 | 2.18 | 0.34 | 0.11 |
| Honeydew 1 | 34.76 | 28.41 | 1.2 | 0.05 | 2.20 | 1.87 | 0.93 | 0.23 |
| Honeydew 2 | 30.06 | 26.93 | 1.1 | 0.17 | 2.60 | 2.31 | 1.20 | 0.58 |
| Honeydew 3 | 35.27 | 25.20 | 1.4 | 0.06 | 2.85 | 1.67 | 1.15 | 0.52 |

Sugar spectrum (%)

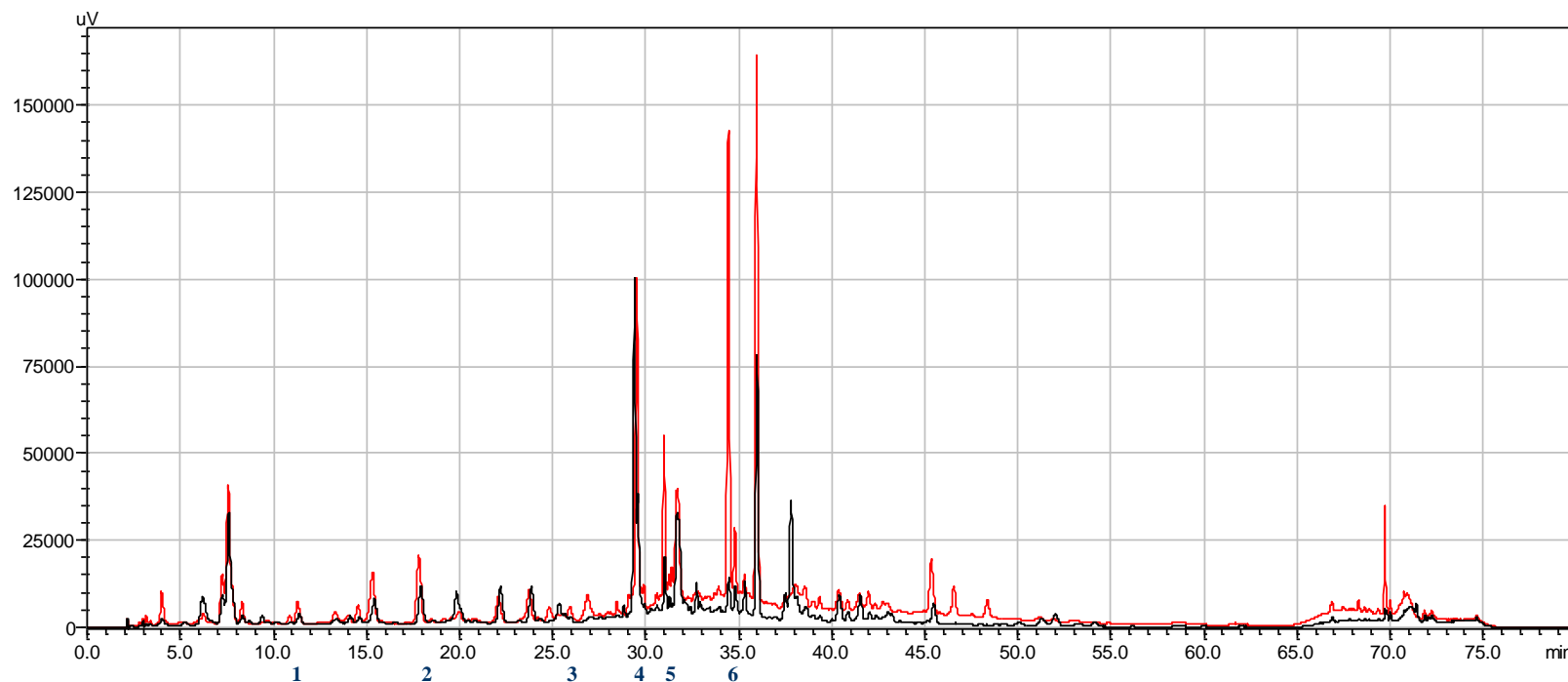
Results: Mineral Composition

| Honey sample | Na mg/kg | Mg mg/kg | Ca mg/kg | Fe mg/kg | K mg/kg | Pb mg/kg |
|--------------|-------------|-------------|-------------|-------------|------------|-------------|
| Fallopia 1 | 64.62 | 15.74 | 28.77 | 3.68 | 1187.36 | 0.00 |
| Fallopia 2 | 58.81 | 16.27 | 46.09 | 2.07 | 1414.56 | 0.00 |
| Fallopia 3 | 68.88 | 4.86 | 41.84 | 3.09 | 6196.83 | 0.00 |
| Honeydew 1 | 28.89 | 26.41 | 38.03 | 2.83 | 1265.26 | 0.00 |
| Honeydew 2 | 68.37 | 8.25 | 25.49 | 3.78 | 6264.76 | 0.00 |
| Honeydew 3 | 68.66 | 5.15 | 26.94 | 4.19 | 5129.21 | 0.00 |

Results: Sample preparation for polyphenolic determination



Results: Phenolic profile



1: 3,4-diOH-benzoic acid; 2: p-OH benzoic acid; 3: siringic acid;
4: p-coumaric acid; 5: ferulic acid; 6: t-cinnamic acid

Results: Antioxidant activity

| Honey sample | % Inhibition |
|--------------|--------------|
| Fallopia 1 | 76.75 |
| Fallopia 2 | 66.45 |
| Fallopia 3 | 61.69 |
| Honeydew 1 | 60.45 |
| Honeydew 2 | 59.47 |
| Honeydew 3 | 61.03 |

Results: Antibacterial activity

| | <i>Staphylococcus pseudintermedius</i> | <i>Staphylococcus aureus</i> | <i>Bacillus cereus</i> | <i>Salmonella enteritidis</i> |
|----------------|--|------------------------------|------------------------|-----------------------------------|
| Fallopia 1 | | | | |
| Average | 10.33 | 14.67 | 14.33 | 0.00 |
| stdev | 0.58 | 0.58 | 0.58 | 0.00 |
| Fallopia 2 | | | | |
| Average | 15.67 | 17.33 | 15.00 | 10.00 |
| stdev | 0.58 | 0.58 | 0.00 | 0.00 |
| Fallopia 3 | | | | |
| Average | 14.33 | 17.00 | 12.33 | 10.00 |
| stdev | 0.58 | 0.00 | 0.58 | 0.00 |
| Honeydew 1 | | | | |
| Average | 15.67 | 20.33 | 11.67 | 10.00 |
| stdev | 0.58 | 0.58 | 0.58 | 0.00 |
| Hooneydew 2 | | | | |
| Average | 16.67 | 21.67 | 11.67 | 10.00 |
| stdev | 0.58 | 0.58 | 0.58 | 1.00 |
| Honeydew 3 | | | | |
| Average | 13.33 | 16.00 | 13.67 | 9.67 |
| stdev | 0.58 | 1.00 | 0.58 | 0.58 |

Perspectives :

- Collaboration between laboratories to establish Romanian honey composition on a high number of samples
- Developing new methods of quantification of active principles from different type of honeys with high bioactive properties
- Exploitation of synergistic effect between honey and other bee products of plant extracts in order to increase the functionality of all bee products

Conclusion:

Leaving aside that *Fallopia japonica* is an invasive plant, it can be exploited by beekeepers, in producing a type of honey which have very high bioactive properties, and may be better known by consumers for its properties

The quote: **If you can't beat it , eat it....** is good even for bees, for producing this excellent honey

THANK YOU FOR YOUR ATTENTION

