



APITHERAPY

A New Approach for Honey and Hive Products

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ACTUAL REGULATORY STATUS OF BEE PRODUCTS

- Food (dietary supplements)
- Functional food
- Novel food*
- Cosmetics
- Medicines* - EMEA
- *Novel Food is defined as food that has not been consumed to a significant degree by humans in the EU prior to 1997, when the first Regulation on novel food came into force.
- Examples of Novel Food include agriculture products from third countries (chia seeds), newly produced nutrients (synthetic zeaxanthin) or extracts from existing food (rapeseed protein).
- Novel Food **must be: Safe** for consumers: Properly



BEE PRODUCTS AND APITHERAPY



- Currently, **Apitherapy is a NON-REGULATED PRACTICE**, (*herbal or naturopathic medicine, dietary and nutritional supplement regulations*)
 - **Apitherapists may integrate:**
 - techniques,
 - products or
 - therapies
- only as a **therapeutic partnership** with people towards improving their overall health and well being.
- Doing so DOES NOT NEGATE THE VALIDITY OF, OR REPLACE conventional medical therapies, but **SERVES AS A COMPLEMENT**, to help individuals access their greatest healing potential.



A WORLD OF HONEY



HONEY



HONEY AS FOOD

- Conventional honey
- **Organic honey – the product is not certified**

Honey in food supplements (vehicle)

- Bee products, essential oils, medicinal and aromatic plants (herbs)

NO CLAIMS AUTHORIZED FOR HONEY! (EFSA)

Scientific Opinion on the substantiation of health claims related to honey and “respiratory health through presence of antioxidant phytochemicals” (ID 1161), “the unique composition and ratio of effective substances adds energy to the human body” (ID 3188), and “it stimulates the whole metabolism and the immune system” (ID 3189) pursuant to Article 13(1) of Regulation (EC) No 1924/2006



HONEY AS MEDICINE



Medicinal honeys:

- excellent wound healing agents
- good antibacterials

Defensin -1 – burns and skin infections (antibiotic resistant infections)



Activon® Manuka Honey Wound dressing selection guide

Type	Neuretic	Sloughy	Infected / Odorous	Granulating	Epithelializing
Aim	Debride	Remove slough	Reduce bacterial load / Eliminate odour	Promote granulation	Maintain moist environment
Product	Aligreen Aligreen Plus Aligreen Plus Ribbon Activon Tube	Aligreen Aligreen Plus Aligreen Plus Ribbon Activon Tube	Aligreen Aligreen Plus Aligreen Plus Ribbon Activon Tube	Activon Tube Activon	Activon

* Because of the osmotic nature of honey, be aware that liquid can be drawn from the wound and this needs to be managed effectively with an appropriate secondary dressing, such as the Dressing Pad or Alginate Dressing.
* Pure manuka honey has no known bacterial resistance so therefore can be used to topically treat all infected wound types.
Activon

BEE COLLECTED POLLEN



BEE COLLECTED POLLEN



- Unequivocally, bee pollen can be recommended as **A VALUABLE DIETARY SUPPLEMENT.**
- The health-enhancing value of bee pollen is expected due to the **wide range of secondary plant metabolites** (tocopherol, niacin, thiamine, biotin and folic acid, polyphenols, carotenoid pigments, phytosterols), besides enzymes and co-enzymes.
- There are promising reports on the antioxidant, anti-inflammatory, antibacterial, antifungal, hepato-protective, anti-atherosclerotic, immune enhancing potential, but they still require long-term and large clinical studies.
- The main difficulty in the application of bee pollen in modern phyto-medicine is related to the **wide species-specific variation in its composition.**
- Although the bee-pollen components have potential bioactive and therapeutic properties, extensive research is required before bee pollen can be used in therapy.

Journal of the Science of Food and Agriculture
Volume 96, Issue 13, pages 4303–4309, October 2016

BEE COLLECTED POLLEN



What is the best ?

Antibacterial and antifungal

Fatrcová-Šramková K. et al., *J Environ Sci Health B*.
2016;51(3):176-81

The best **antibacterial effects** of the **dried sunflower bee pollen extracts** were found against *Paenibacillus larvae*, *Pseudomonas aeruginosa*, and *Enterococcus raffinosus*.
The best **inhibitory properties** of the **frozen sunflower bee pollen extracts** were found against *Escherichia coli*, *Pseudomonas aeruginosa*, and *Paenibacillus larvae*.

BEE COLLECTED POLLEN



	Fresh bee pollen 1				Fresh bee pollen 2				Dry bee pollen 1				Dry bee pollen 2			
	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16
Gram-ve bacteria																
★ <i>E. coli</i> 1	25	20	10	-	14	11	9	-	23	20	10	-	-	-	-	-
<i>E. coli</i> 2	31	28	22	14	13	11	10	8	35	24	19	14	19	9	-	-
<i>E. coli</i> ATCC 25921	12	-	-	-	14	12	10	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> 1	12	-	-	-	13	10	8	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> 2	10	9	-	-	15	12	10	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> ATCC 29733	12	8	-	-	25	20	18	14	15	13	-	-	10	9	-	-
<i>Salmonella enteritidis</i>	33	29	21	-	14	12	11	8	19	14	-	-	9	-	-	-
Gram+ve bacteria																
★ <i>S. aureus</i> 1	13	10	9	-	12	11	8	-	13	11	-	-	12	10	-	-
<i>S. aureus</i> 2	15	10	-	-	16	12	10	-	12	-	-	-	11	10	-	-
<i>S. aureus</i> ATCC 25923	15	12	11	-	18	14	11	8	12	11	9	-	13	11	-	-
<i>Streptococcus</i> 1	14	10	9	-	20	19	13	10	28	20	9	-	21	18	10	-
<i>Streptococcus</i> 2	9	8	-	-	14	12	11	9	-	-	-	-	9	-	-	-
<i>Streptococcus</i> 3	11	9	-	-	15	12	11	10	9	-	-	-	10	-	-	-
<i>Bacillus cereus</i>	16	12	10	-	15	11	9	8	12	10	9	-	12	10	9	-

Effect of different concentrations of **fresh** and **dried** bee pollen on different bacterial isolates

Abouda, I. Zerdani, I. Kalalou, M. Faid and M.T. Ahami, **2011**. The Antibacterial Activity of Moroccan Bee Bread and Bee-Pollen (Fresh and Dried) against Pathogenic Bacteria. *Research Journal of Microbiology*, 6: 376-384.

BEE COLLECTED POLLEN



Functional and biological properties

- *a probiotic effect of fresh (deep frozen pollen)* but not of dry pollen was announced (Percie du Sert, 2009).
- The *probiotic lactic bacteria* are not viable in dry pollen. In rat experiments it was shown that pollen ingestion improves food digestability, stimulates growth and weight gain (Chauvin, 1968; Chauvin, 1987).
- The *hepatoprotective* and the *anti-radiation* activity are often closely correlated.
- Hepatoprotective activity of **pollen** on rats (Uzbekova et al., 2003), (Eraslan et al., 2008a) and pesticide induced intoxication of rats (Eraslan et al., 2008b).¹²

BEE BREAD



BEE BREAD



Bee bread was found to have a high **antioxidant activity** (Nagai et al., 2004; Baltrusaityte et al., 2007b).

- **Antibacterial activity** against *Staphylococcus aureus* and *S. epidermidis* (Baltrusaityte et al., 2007a).
- Three extracts, namely **hot-water fraction** (HWF), **water-soluble fraction** (WSF), and **ethanol soluble**





BEE BREAD - *Antibacterial*



Abejitapayoya.blogspot.com.es

	Bee bread 1				Bee bread 2				Bee bread 3				Bee bread 4			
Strains	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16
Gram-ve bacteria																
<i>E. coli</i> 2	10	9	-	-	14	-	-	-	17	-	-	-	20	14	-	-
<i>E. coli</i> 3	13	10	-	-	16	11	-	-	27	24	19	18	14	11	9	-
<i>E.coli</i> ATCC25921	12	11	-	-	14	12	10	9	18	11	-	-	14	10	-	-
<i>P. aeruginosa</i> 1	15	12	-	-	20	14	12	-	18	11	-	-	14	10	-	-
<i>P. aeruginosa</i> 2	19	18	15	10	20	14	12	-	17	15	11	-	9	9	-	-
<i>P. aeruginosa</i> ATCC 29733	13	-	-	-	16	14	12	10	16	14	10	-	16	12	10	9
<i>Salmonella enteritidis</i>	26	20	10	-	16	13	10	-	12	9	-	-	27	22	17	-
Gram+ve bacteria																
<i>S. aureus</i> 1	13	12	9	-	15	10	-	-	18	16	-	-	14	12	11	-
<i>S. aureus</i> 2	16	12	10	-	14	10	9	-	29	20	18	14	28	25	19	18
<i>S. aureus</i> ATCC25923	10	9	-	-	16	13	10	-	24	19	15	12	12	10	9	-
<i>Streptococcus</i> 1	11	9	-	-	24	20	15	10	25	18	15	11	20	14	11	-
<i>Streptococcus</i> 2	13	10	8	-	14	11	-	-	14	11	-	-	14	10	-	-
<i>Streptococcus</i> 3	11	9	-	-	12	11	-	-	14	12	11	9	12	10	-	-
<i>Bacillus cereus</i>	12	-	-	-	20	18	15	13	16	13	9	-	18	15	13	10

PROPOLIS

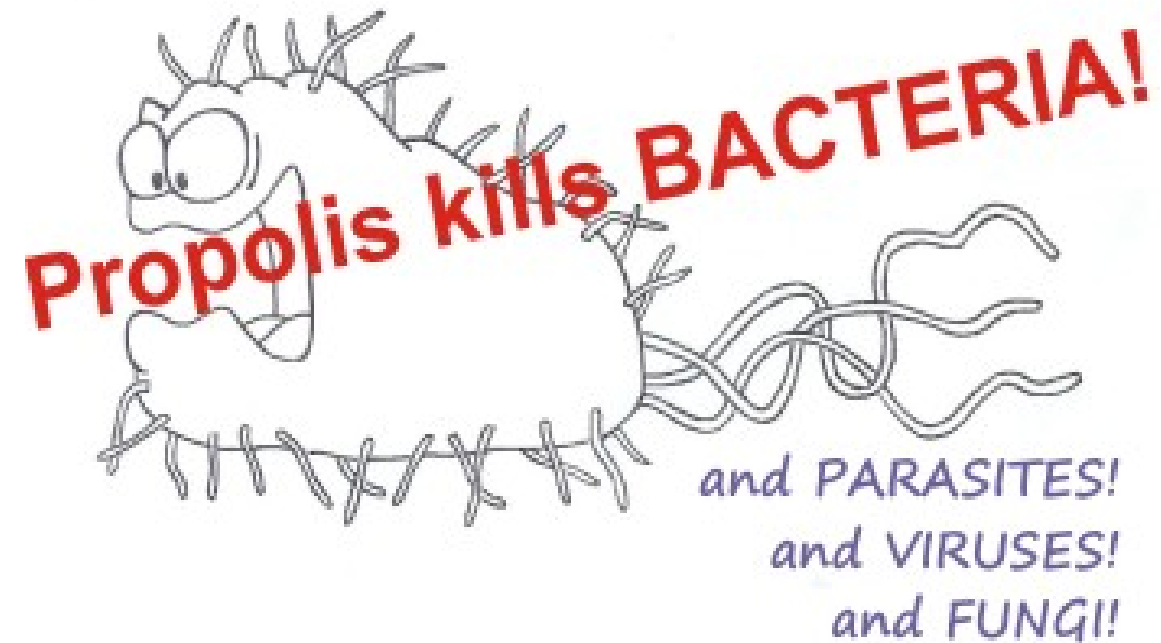


PROPOLIS AS DIETARY SUPPLEMENT

- As a dietary supplement, propolis is available in products for the protection of health and prevention of diseases.
- It can also be found in **biopharmaceuticals**, and as a constituent of (bio)cosmetics.
- While it cannot be found under the label “antibiotic”, we can use it raw, in extracts or tinctures to heal ourselves from unwanted microorganisms like bacteria, viruses, fungi, parasites.



PROPOLIS



<http://healthywithhoney.com>

- Although the **composition** of propolis differs considerably depending on its **botanical origin**, all examined types of propolis revealed a **strong antibacterial activity**. There are some differences in the antibacterial activity of some types of propolis, which are due to the type of **honey bee** that gathered it. E.g. Poplar propolis gathered by *Apis mellifera caucasica* had a higher antibacterial activity than the one gathered by *Apis mellifera anatolica* and *Apis mellifera carnica*.

PROPOLIS - ANTIBACTERIAL

Gram-positive bacteria	Gram negative bacteria	Fungi	Viruses	Parasites
<p>Bacillus cereus, Bacillus mesentericus, Corynebacterium spp., Corynebacterium diphtheriae, Diplococcus pneumoniae, Enterococcus spp., Mycobacteria sp., Mycobacterium tuberculosis, Staphylococcus aureus, Streptococcus: criteus epidermis faecalis mutans, pyogenes, viridans, Sobrinus, Micrococcus luteus</p>	<p>Branhamella catarrhalis, E. coli, Helicobacter pylori, Klebsiella ozaemae, Klesbsiella pneumoniae, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella: choleraesuis, dublin, enteritidis, exneri, gallinarum, pullorum, typhimurium, paratyphi-A, paratyphi-B, typhi Shigella: dysinteriae, sonnei</p>	<p>Aspergillus sp., Candida: albicans, guiliermondi, parapsilosis, tropicalis; Cryptococcus sp., Cryptococcus neoformans Histoplasma encapsulatum, Madurella mycetomi, Microsporium: audoini, canis, cepheo, distortum, ferrugineum, gypseum; Piedra hortae, Phialophora jeanselmei, Saccharomyces sp. , Trichophyton: sp., mentagrophytes, rubrum, Trichosporon cutaneum</p>	<p>Adenovirus, Coronavirus, Herpes simplex, Influenza A and B virus, Newcastle disease virus, Polio virus, Vaccinia, Rotavirus; Vesicular Stomatitis Virus, Corona virus</p>	<p>Cholomonas paramecium, Eimeria: magna, media, Perforans; Giardia lamblia, Giardia duodenalis, Trichomonas vaginalis, Trypanosoma cruzi, Trypanosoma evansi.</p>

PROPOLIS RESEARCH



J. Sforcin - Biological Properties and Therapeutic

Applications of Propolis: *Phytotherapy Research: Vol. 30, Issue 6 June 2016*

Pages 894–905



- Efforts have been carried out to explain propolis mechanisms of action *in vivo* and *in vitro*, but the majority of propolis targets and actions are still unclear.
- The number of **formulations containing propolis and patents have increased**, although propolis extracts have been used deliberately with different recommendations, not always mentioning the chemical composition, vegetal source and the methods of extraction.
- Clinical studies will help to obtain recommendations in view of the expected outcomes.
- Further investigation should explore the effects of common compounds found in the samples from all over

PROPOLIS RECENT RESEARCH



- • Antibacterial effect of triantibiotic mixture, chlorhexidine gel, and two natural materials Propolis and Aloe vera against *Enterococcus faecalis*: An ex vivo study, Bazvand L et al, July 2014;
- • Antibacterial activity of a cardanol from Thai *Apis mellifera* propolis, by Boonsai P et al, Feb 2014;
- • A Comparison between Antibacterial Activity of Propolis and Aloe vera on *Enterococcus faecalis* (an In Vitro Study), by Ehsani M et al, 2013
- • Chemical and botanical characterization of Chilean propolis and biological activity on cariogenic bacteria *Streptococcus mutans* and *Streptococcus sobrinus*, by Leticia Barrientos et al, 2013
- • Omani propolis: chemical profiling, antibacterial activity

BRAZILIAN PROPOLIS



(a)



(b)



(a)



(b)

A relatively new type of propolis, (Brazilian **Red** Propolis - BRP), has been arousing attention for the **promising pharmacological properties** of some of its isolated compounds (*vestitol, neovestitol, quercetin, medicarpin, formononetin*, etc). Due to a distinct chemical composition, BRP and its isolated compounds (mainly *isoflavones*) affect a wide range of biological targets and could have an impact against numerous diseases as an antimicrobial, anti-inflammatory and immunomodulatory, antioxidant and antiproliferative agent.

106 articles in Pubmed (2000-2016) about red propolis

ROYAL JELLY



What makes royal jelly good for health?

1. HDA and fatty acids

antibacterial, immuno activating, immuno modulating, anti-cancer, anti-diabetes, collagen promoting and skin protecting, anti-ulcer, facilitates differentiation of brain cells, estrogenic, antidepressant, anti-rheumatic.

2. Proteins and peptides

- Up to 90% of proteins found in royal jelly are of the MRJP type (major royal jelly protein). This protein type belongs to the albumin protein class and has immuno-modulating effects. Other proteins, like glycoproteins, and peptides have been identified: apisimin, one with antihypertensive activity and “jeleines” with antibacterial properties.

3. AMP-N1 Oxide

- AMP-N1 Oxide stands for Adenosine monophosphate N1 oxide and is a unique compound, ***found only in royal jelly***. It is connected with the

What makes royal jelly good for health?

4. Adenosine

- Adenosine is a biomolecule with many physiological effects. It produces inhibition in vascular smooth muscle cells of coronary arteries and neurons in the brain, by its hyperpolarising effect on the membrane potential of excitable cells. Royal jelly contains 5.9 to 2057.4 mg/kg adenosine.

5. Acetylcholin

- Acetylcholin is a nerve transmitter, with a number of hormone-like effects in the central and vegetative nervous system. There is 1 mg of it at every gram of dry weight of royal jelly.

6. Hormones: testosterone, progesterone, prolactine, estradiol.

- These hormones help increase the fertility of both male and female, and also increase male power and endurance

7. Polyphenols

ROYAL JELLY – *Nervous system*



Scientific research directions: ANIMAL STUDIES !!!

Hashimoto M, et al., Biosci Biotechnol Biochem. **2005** Apr;69(4):800-5.

Oral administration of royal jelly facilitates mRNA expression of *glial cell* line-derived *neurotrophic factor* and *neurofilament H* in the **hippocampus** of the adult mouse brain;

Hattori N. et al., Biomed Res. **2007** Oct;28(5):261-6.

Royal jelly and its unique fatty acid, 10-hydroxy-trans-2-decenoic acid, **promote** *neurogenesis* by neural stem/progenitor cells in vitro;

Pyrzanowska J, Piechal A, et al., J Ethnopharmacol. **2014** Aug 8;155(1):343-51.

Long-term administration of Royal Jelly improves *spatial memory* and influences the concentration of *brain neurotransmitters* in naturally aged Wistar male rats.



ROYAL JELLY – *Hormonal Effects* –



Estrogene

Scientific research directions: animal and human studies

Mishima S., et al., J Ethnopharmacol. **2005** Oct 3;101(1-3):215-20.

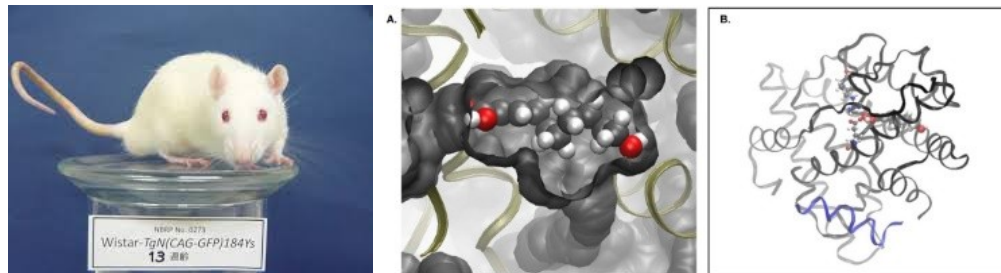
RJ has estrogenic activities through interaction with estrogen receptors followed by endogenous gene expressions (*in vitro* and *in vivo*).

Moutsatsou P, Papoutsis Z, et al., PLoS One. **2010** Dec 22;5(12)

Fatty acids derived from royal jelly are **modulators of estrogen** receptor functions.

Seyyedi F., et al., J Clin Diagn Res. **2016** May;10(5)

Royal jelly in treatment of sexual and urinary problems of postmenopausal women is related to its **estrogenic properties** and could be suitable in promotion of life quality in ***postmenopausal women***.



ROYAL JELLY – *Hormonal Effects - Testosterone*

Scientific research directions: Animal studies

Ghanbari E, Nejati V, et al., *Int J Fertil Steril*. **2015** Apr-Jun;9(1):113-20.

RJ improved reproductive parameters such as testicular weight, sperm count, viability, motility, deformity, DNA integrity, chromatin quality, serum testosterone and testicular tissue MDA levels in diabetic rats.

Karaca T, Demirtaş S, Karaboğa İ, Ayvazz S. *Turk J Med Sci*. **2015**;45(1):27-32.

Protective effects of royal jelly against testicular damage in streptozotocin-induced diabetic rats.

Ghanbari E, Nejati V, Khazaei M. *Int J Reprod Biomed (Yazd)*. **2016** Aug;14(8):519-26.

RJ improved diabetes-induced impairment in testis, probably through its antioxidant property.



ROYAL JELLY - *Cancer*



- According to a study published in a **2009** edition of the *BMC Complementary and Alternative Medicine*, **royal jelly fights cancer by suppressing the blood supply to tumors**.
- Also, according to a study published in the December **2010** edition of *PLoS One*, since the fatty components of the jelly contain estrogenic effects, it is possible that it can treat **breast and cervical cancer**.
- There are studies regarding royal jelly in treating **leukemia**. Several clinical trials have shown that it **reduces the harmful effects of cisplatin (chemotherapy drug) on the kidneys and liver**. Also, some of the **side effects of chemotherapy** and radiation treatments such as “chemo skin” and other serious skin irritations can be repaired by royal jelly supplements.



LARVAL BEES



en.wikipedia.org



blog.dnevnik.hr

Drone brood triturate (apilarnil)
Queen larvae (following the extraction of royal jelly)

LARVAL BEES - *Drones*



Seres A, Ducza E, Gáspár R. Acta Pharm Hung. **2014**; 84(2):77-81.

Drone milk (triturate) is traditionally used to treat infertility and to promote vitality in both men and women.

The *oestrogenic* and *androgenic* effects of drone milk (triturate) have recently been reported in rats and the effective compounds have also been identified.

Seres AB, Ducza E, et al., J Med Food. 2013 May;16(5):404-9

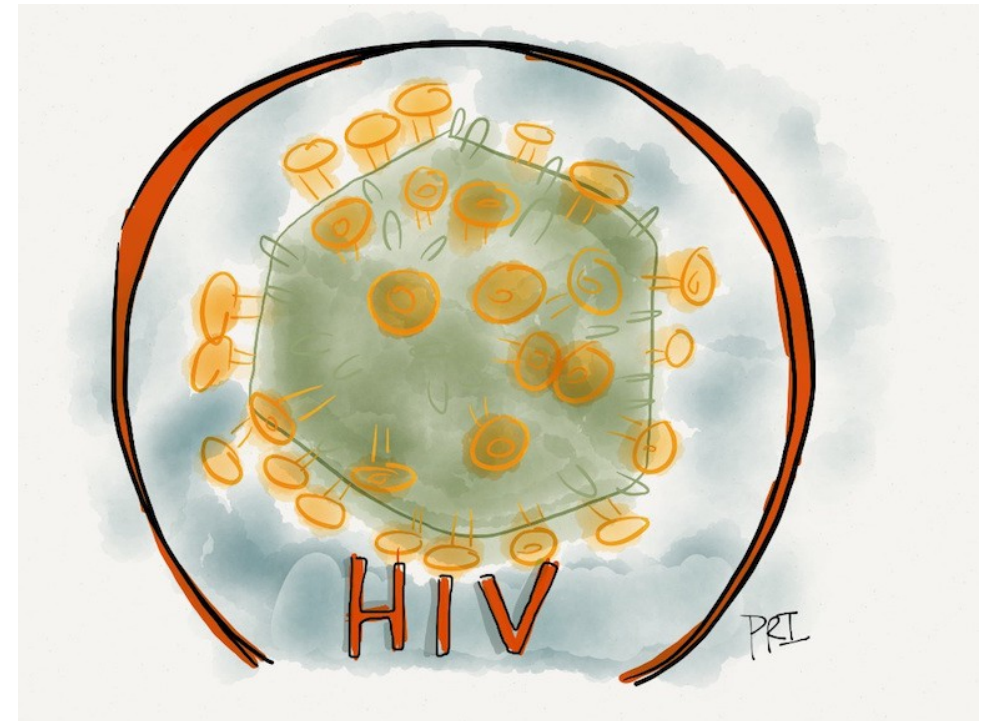
Drone Milk (triturate) was reported to elicit a ***hormone-like strengthening*** effect.

The active compound (identified by the NMR and MS) as ***E-dec-2-enedioic acid***, very similar to the fatty acids with estrogenic activity that were previously isolated from royal jelly.

These results lead to the supposition that ***E-dec-2-enedioic***



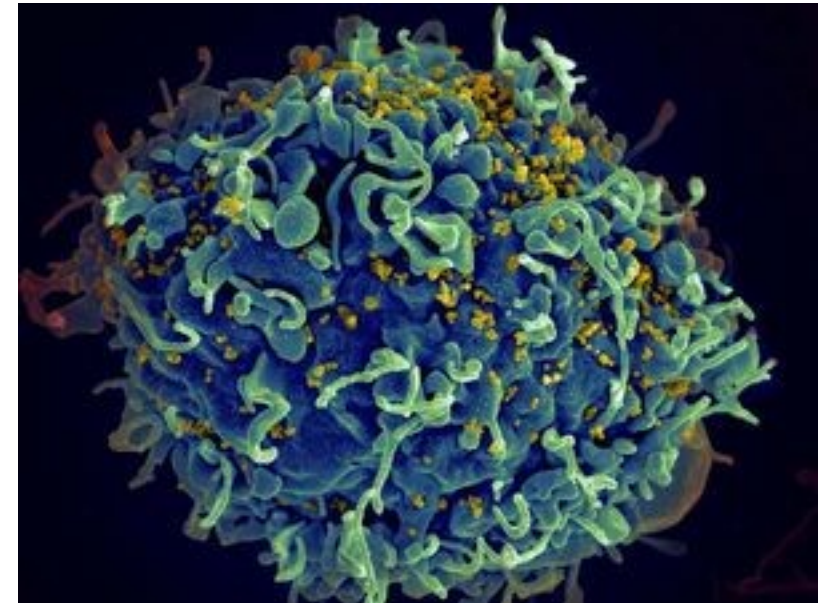
BEE VENOM - APITOXIN



BEE VENOM - HIV



- Pubmed – 28 papers
- Monash Bioeth Rev. **2013** Sep;31(2):4. - New research finds HIV can be killed with bee venom
- Bee venom destroyed HIV without damaging cells. ([AIDS Policy Law](#). 2013 Apr;28(5):1.)
- Nanoparticles containing bee venom toxin **melittin** can destroy human immunodeficiency virus (HIV) while at the same time leaving surrounding cells unharmed, scientists from Washington University School of Medicine reported in the March 2013 issue of *Antiviral Therapy*.



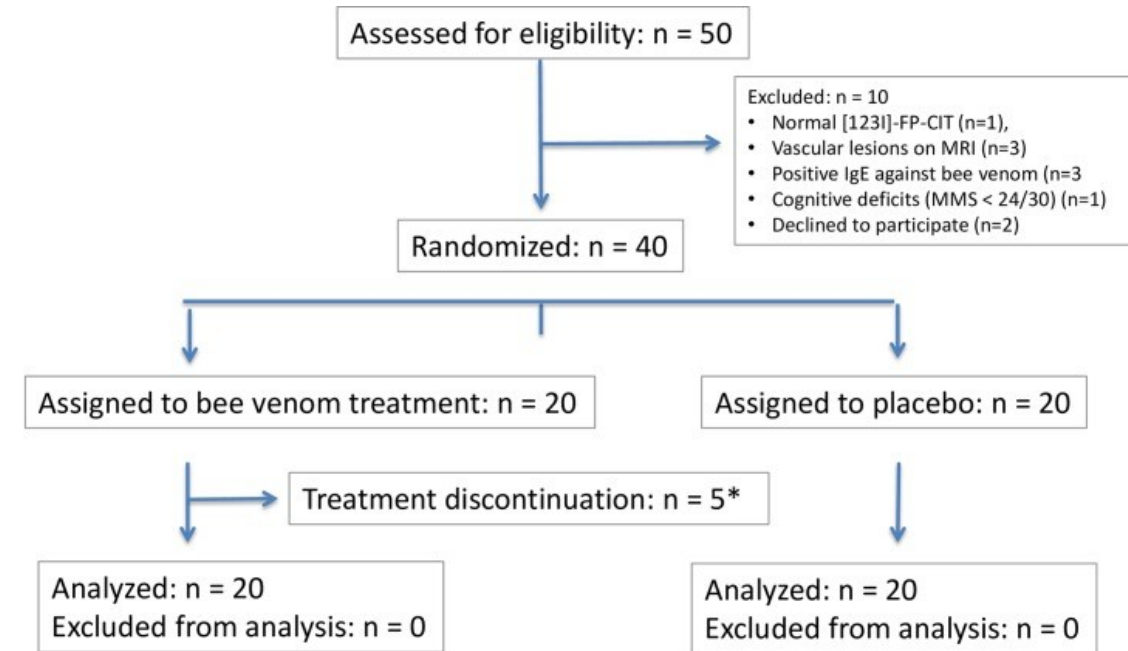
BEE VENOM – PARKINSON DISEASE



BEE VENOM THERAPY

PLoS One. 2016 Jul 12;11(7):e0158235. doi:Parkinson's disease

- Evaluation of the efficacy of repeated (monthly) injections of bee venom on motor symptoms of Parkinson's disease over a period of one year, also the potential effects of this treatment on disease progression compared to placebo (saline injections).
- Dr. Andreas Hartmann
- **Bee Venom Alleviates Motor Deficits and Modulates the Transfer of Cortical Information through the Basal Ganglia in Rat Models of Parkinson's Disease**



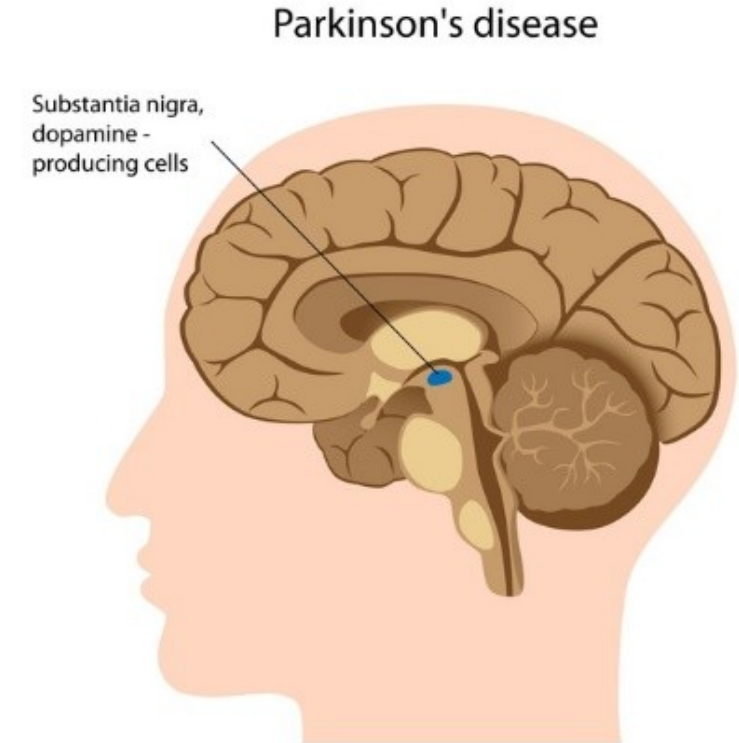
* According to the protocol, these patients were followed until the end of study

BEE VENOM – PARKINSON DISEASE



Doo KH, Lee JH et al., *J Altern Complement Med.* 2015 Oct;21(10):598-603.,

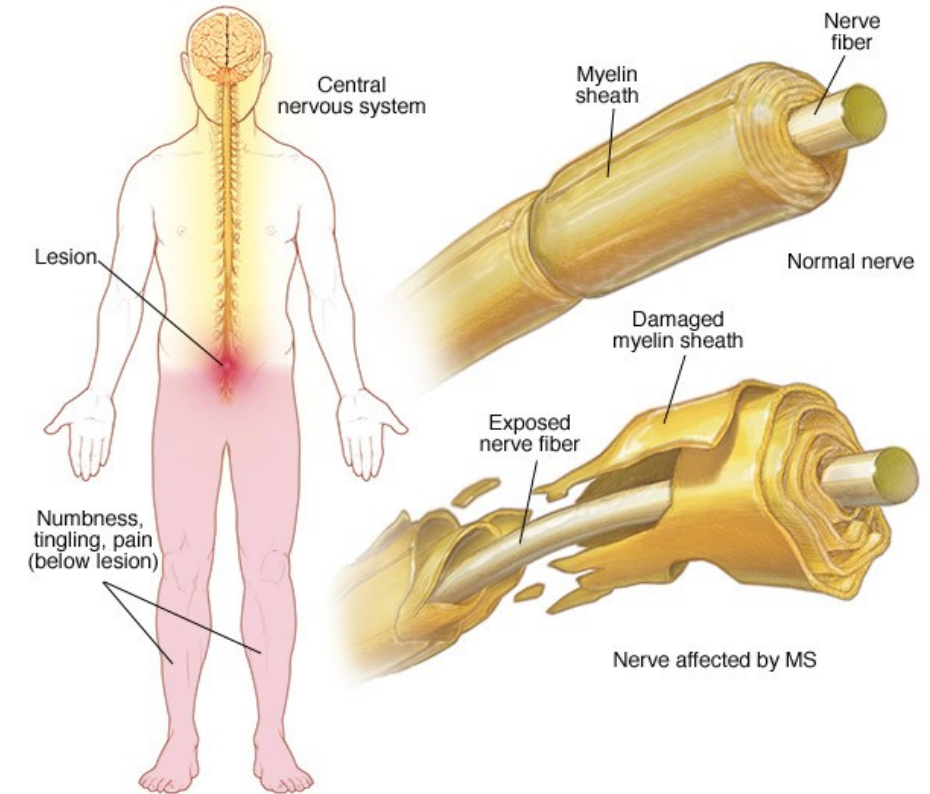
- **A Prospective Open-Label Study of Combined Treatment for Idiopathic Parkinson's Disease Using Acupuncture and Bee Venom Acupuncture as an Adjunctive Treatment.**
- **Results:** 12 weeks of twice-weekly combined treatment with acupuncture and BVA showed significant improvements;
- **Still more clinical trials are necessary to draw a clear conclusion;**



BEE VENOM - MULTIPLE SCLEROSIS



- 8 years study (2008-2016)
- MS patients and animal models
- Further studies with a focus on the molecular mechanisms of the protective natural compounds are needed to decrease possible side effects and to develop new medicines for MS.
- **Apigenin, chrysin**, baicalein, cyanidin, flavone glycoside, daidzein, coumestrol, sulforaphane, **bee venom** and huperzine A are the candidates for more prospective investigations.
- [Curr Drug Targets](#). 2016 Nov 8. (ahead of print)



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WHO Traditional Medicine Strategy 2014-2023

Strategic objectives:

- **1) building the knowledge base and formulating national policies;**
- **2) strengthening safety, quality and effectiveness through regulation**
- **3) promoting universal health coverage by integrating T&CM services and self-health care into national health systems.**
- „It is my conviction that it will be a valuable tool for governments, system planners and health practitioners and – most crucially – will benefit individuals seeking the right care, from the right practitioner, at the right time.”
- Dr. Margaret Chan - Director-General WHO



CONCLUSIONS

MAJOR CHALLENGES FOR APITHERAPY



- a) recognition by governments;**
- b) enough or sound scientific evidence concerning the efficacy of the products or protocols used;**
- c) protection of indigenous traditional medicine knowledge;**
- d) ensuring its proper use;**



MAJOR CHALLENGES FOR APITHERAPY



To overcome the above-mentioned challenges,

- policy,
- regulations,
- standards,
- clinical practice,
- researches,
- education and
- information

MUST BE implemented under the theme of "**Standardization with evidence-based approaches.**"

HOW CAN WE GO FORWARD: THREATS FOR CREDIBILITY



- The **quality of bee products** (adulteration, use of synthetic products, industrial glucose syrups for feeding the bees;)
- Need for **standards**; - a large diversity – biological action could be an important parameter and not the chemical composition
- **Organic certification** for the beekeeping practice is not a certificate for an organic product;
- **Clinical studies**: to have a certain clear result they should use the same or a (homeogenous) raw material and the same



(a)



(b)

Brazilian green propolis

<http://www.intechopen.com/books/alternative-medicine/antifungal-activity-of-propolis-oral-clinical-studies-in-humans>



Other types of propolis

<http://www.beevpp.com/propolis/4/Ce-este-propolisul.html>



CLINICAL RESEARCH COLLABORATION

- Research on efficacy and effectiveness of apitherapy ***is severely hampered*** by the conglomerate of regulation.
- Practices and practitioners ***are not comparable*** across the world, and any observational or experimental ***study will therefore be generalizable only within a narrow national or cultural context.***
- Research should be strengthened on the ***monitoring and safety aspects on apitherapy practices.***



CLINICAL TRIALS



- ***Clinical studies***: to have a certain clear result they should use the same or a (***homogenous***) raw material;
- A dose-dependend relationship;
- Studies with chinese (*Apis cerana*) royal jelly might not offer the same results as those carried out with royal jelly produced by *Apis mellifera*;
- Propolis (EFSA : a conclusion cannot be drawn on the health relationship mentioned as studies carried out with various types of propolis with various compositions);
- EFSA Journal 2011;9(4):2083 - Scientific opinion

WHAT COULD BE DONE?



- The process of **sharing ideas** about health has already begun in some universities and on governmental committees.
- A need for **high education**: students in medicine and pharmacy should have training on complementary natural therapies (apitherapy included);
- **Post – graduate education** – competence in apitherapy; training for practitioners;



Medical Students >

WHAT COULD BE DONE?



- **Clinical studies** according to agreed protocols in conventional medicine (drawbacks: the large variations of compositions, large doses (royal jelly, bee pollen, bee bread))
- Modern, **joint health programmes** where doctors, psychotherapists and complementary medicine practitioners work together to create ***the theoretical and practical groundwork*** for a **NEW STYLE OF MEDICINE**.
- Prevalence of ***chronic diseases and cancer*** are increasing especially in industrialized countries, and now, they are considered as complex diseases that demand **study from multiple perspectives** – a great chance for apitherapy to prove its efficacy as an **ALTERNATIVE/COMPLEMENTARY** therapy.

THANK YOU FOR YOUR ATTENTION!
GRAZIE !



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