



Sugi Bee Garden's Market Share (Manuka Honey-Related Products)

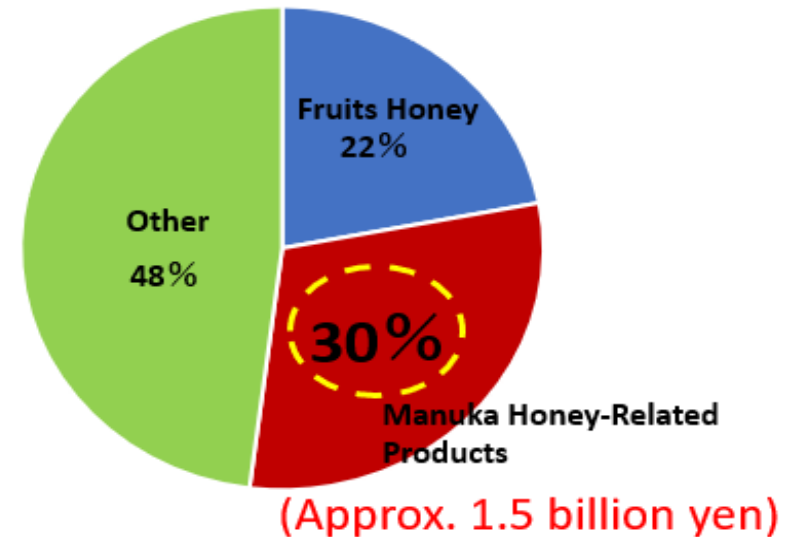
Due to the rise in health consciousness, the demand for Manuka Honey has also risen and is **on track to surpass that of Fruit Juice Infused Honey, our company's best-selling product!**

- NZ Manuka Honey Global Export Volume : 5,850t
- Japan Import Volume : about 920t
- Volume of Manuka Honey handled by Sugi Bee Garden : about 120t
(Approximately **13%** of the total in Japan)

Unique Manuka Honey products "Available at Sugi Bee Garden!"

- Manuka Honey with Propolis (Manuka + Propolis)
- Manuka Honey with Fresh Royal Jelly (Manuka + Royal Jelly)
- Manuka Honey with Royal jelly, Propolis (Manuka + Royal Jelly + Propolis)

Market Share(year2020)





What is Manuka ?



A small tree of the myrtle family that grows only in New Zealand. "Manuka" in the Maori language means "tree of revitalization" or "tree of healing".

The honey created by bees from the flowers of the Manuka is called Manuka Honey.

Manuka Honey is known for its powerful antibacterial properties due to "Methylglyoxal (MGO)," and is also known to have stronger antioxidant properties than honey made from Acacia and other flowers.

Manuka Honey that have been proven in many researches to have antibacterial properties is also a medical honey harvested for the purpose of medical treatments.

Additional to being proven in studies to be highly effective against H. pylori bacteria that has become a significant issue in recent years, it is also being actively used at medical facilities in the Oceania and American regions to treat diabetes complications, skin diseases due to bedsores for long-term care patients, and more.



Snapshots of Our Manuka Honey Apiary in New Zealand

Manuka Honey

Made in New Zealand



Sugi Bee Garden's Manuka Honey is harvested from New Zealand's pristine nature-protected Manuka flowers.



杉養蜂園
SUGI BEE GARDEN



The source of honey is the flowers of Manuka which grows naturally in New Zealand's magnificent nature.

New Zealand is a beautiful country with vast nature despite various developments, and people there call the country "Clean-Green New Zealand." Here, the Sugi Bee Garden's apiaries are located deep in the mountains, away from cities. The sources of the honey are solely wild manuka trees growing in the vast nature untouched by human hands, so our Manuka Honey is never exposed to pesticides. That is why we are able to provide monofloral manuka honey which does not contain any other nectar.



Snapshots of Our Manuka Honey Apiary in New Zealand



Sugi Bee Garden beekeepers extracting honey at our apiary in New Zealand.



Photos of SUGI BEE GARDEN (NZ) Co. Limited honey extraction



The honey is extracted at the source, far away from human settlements.



Our apiary is located in a nature-rich area with mountains covered in white Manuka flowers blooming in all their glory.



Collaborating With the New Zealand Government



We established a local subsidiary New Zealand to ensure a stable supply of high-quality Manuka Honey.

Starting 2004, our beekeepers have gone to New Zealand to engage in various activities at the apiary including extracting the honey.

On July 2019, we established our local subsidiary "SUGI BEE GARDEN (NZ) Co. Limited". With the cooperation of the New Zealand government, we are committed to providing reliable supply of good quality Manuka Honey.

Our beekeeping methodology is highly acclaimed even in New Zealand and we cooperate with local beekeepers to harvest honey.





Monofloral Manuka Honey

In February 2018, the New Zealand government enacted a new quality standard as they found that it would be difficult to maintain the quality of Manuka Honey with the current situation.

The new test made mandatory under the standard was the "Manuka Pollen DNA Test".

Including the pollen DNA test, the testing of 4 ingredients that define Manuka helps to give them detailed and accurate data about the Manuka honey and rank them on 3 levels according to the standards.



Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis



Submitted by: N/A
Date Received: 13/02/2020
Testing Initiated: 4/05/2020
Date Completed: N/A
Order Number: N/A
Reference: N/A

Report Comments

Samples were received by Analytica Laboratories in acceptable condition unless otherwise noted on this report.

Results Summary

MPI Manuka Classification*

Laboratory ID	Sample ID	MPI Manuka Classification*
AN-1000711-0	1000	MONOFLORAL MANUKA
AN-1000711-0	1000	MONOFLORAL MANUKA

MPI Manuka Classification* Approver:

Maria Tourna, Ph.D.
Genomics Team Leader

MPI Manuka DNA

Laboratory ID	Sample ID	Manuka DNA
		Units
		Reporting Limit
		Cq
AN-1000711-0	1000	17.45
AN-1000711-0	1000	17.45

MPI Manuka DNA Approver:

Maria Tourna, Ph.D.
Genomics Team Leader

MPI Manuka Markers

Laboratory ID	Sample ID	4-Hydroxyphenyllactic acid (4-HPLA)	2-Methoxybenzoic acid (2-MBA)	2-Methoxy acetophenone (2-MAP)	3-Phenyllactic acid (3-PLA)
		Units			
		mg/kg	mg/kg	mg/kg	mg/kg
		Reporting Limit	0.80	0.80	20
AN-1000711-0	1000	8.0	8.0	8.0	8.0
AN-1000711-0	1000	8.0	8.0	8.0	8.0

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation with the exception of tests marked *, which are not accredited.

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Report ID: AN-1000711-0 MPI_5Attributes (R00)

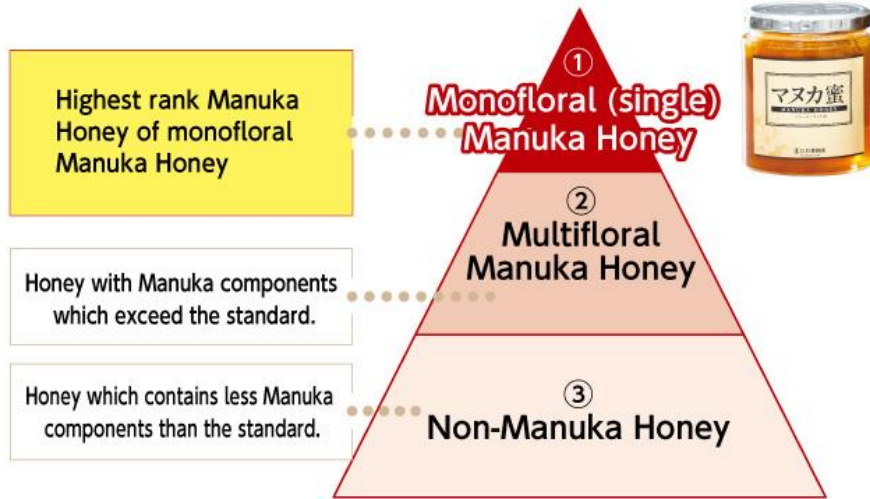
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Report Date 4/05/2020





Monofloral Manuka Honey



3-Tier Quality Standard for Manuka Honey made by the New Zealand Government (announced in February 2018)

Items		① Monofloral Manuka Honey	② Multifloral Manuka Honey	③ Non-Manuka Honey
Four types of chemical tests	3-phenyllactic acid	≥400mg/kg	≥20mg/kg <400mg/kg	Honey which does not meet standards ①. and ②. described on the left cannot be called Manuka Honey.
	2'-methoxyacetophenone	≥5mg	≥1mg	
	2-Methoxybenzoic Acid (o-Anisic Acid)	≥1mg		
	4-hydroxyphenyllactic acid	≥1mg		
DNA test on pollen	qPCR (DNA analysis of pollen)	<Cq36 (36 cycle quantification)		

Source: MPI Website (New Zealand Ministry of Primary Industries)
(<http://www.mpi.govt.nz/growing-and-harvesting/honey-and-bees/manuka-honey/>)

Some Manuka Honey sold worldwide represent their product's quality in numbers based on the distributor's own quality standards, and the numbers are correlated with the amount of "methylglyoxal (MGO)" which the Manuka Honey contains.

However, there are growing concerns that "methylglyoxal" may be artificially increased or added by warming or heating. This new quality standard was enacted to quell this worrisome development.

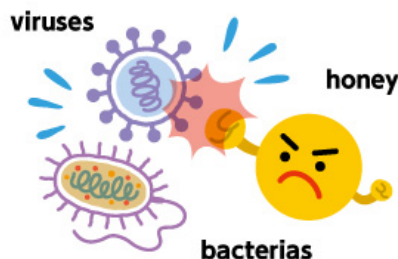
Sugi Bee Garden's Manuka Honey only uses the 5 test standards—chemical tests for the 4 substances and pollen DNA test—enacted by the New Zealand government and is not labelled with numbers.



1 Antibacterial and Antiviral Properties

Honey has the power to repel harmful bacteria and viruses.

Honey contains more than 190 essential nutrients such as sugars, amino acids, vitamins, minerals, flavonoids, and more, making it a very nutritious superfood. The glucose contained in Honey reacts with enzymes in the body to produce hydrogen peroxide (Oxydol) that eliminates harmful microbes. Additionally, a research at ^{※1} Nagasaki University found that it has **antiviral properties that inhibits multiplication of influenza virus**. As such, it is expected to have a similar effect against the novel coronavirus which has a structure similar to influenza virus.



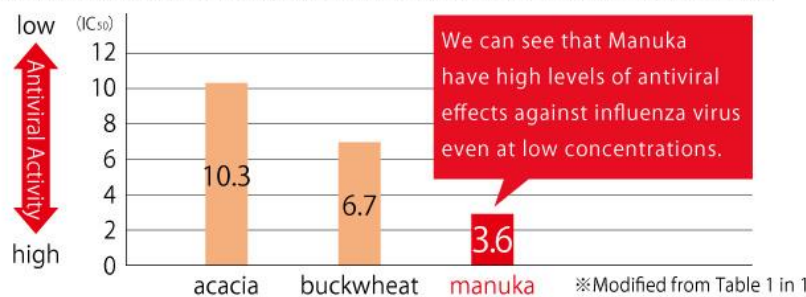
※1 Watanabe K, et al. Archives of Medical Research (2014)45, 359-365

Manuka honey has even stronger antibacterial and antiviral properties compared to Honey.

Depending on the types of flower it is made from, Honey can have different chemical compounds as well as colors and tastes. Among these, the **Manuka honey** made from the flowers of Manuka trees growing in New Zealand **have the best antibacterial and antiviral effects**. The unique "**methylglyoxal**" compound **fights off harmful bacteria and viruses more powerfully than honey**. ^{※2} For instance, it also has excellent antibacterial effects against *H. pylori* that causes stomach cancer, as well as against bacteria of dental caries or periodontal diseases ^{※3} that cause bad breath and arteriosclerosis. ^{※4}

Differences in antiviral activities against influenza virus according to Honey type.

The Y-axis shows the required Honey concentration to reduce the virus count by 50% (IC₅₀).



※2 Johnston M, et al. AIMS Microbiology (2018) 4(4), 655-664 ※3 al Somal N, et al. Journal of the Royal Society of Medicine (1994) 87(1), 9-12 ※4 Schmidlin PR, et al. Swiss Dental Journal (2014) 124(9), 922-924



2 Prevention of Cardiovascular Diseases

Prevents arteriosclerosis and deters heart attacks and strokes.

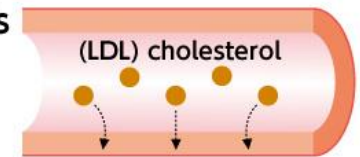
As Honey is 3 times sweeter than sugar, there is a general misconception that it would increase our blood sugar level. In clinical researches at the Mashhad University of Medical Sciences in Iran,^{✱5} obese patients consumed the same amount of either sugar or honey for 1 month and they found that the group that consumed sugar showed an increase in fasting blood sugar levels and bad cholesterol while the group that consumed honey showed improved values for both indicators. As a matter of fact, **regular consumption of Honey prevents excessive weight increase, improves insulin activity, prevents the oxidation of bad cholesterol, and deters heart attacks and strokes caused by arteriosclerosis.**^{✱6}

Why then does honey have the ability to prevent arteriosclerosis in the first place? According to a review article by Universiti Sains Malaysia, **the flavonoids (quercetin, kaempferol, and more) in Honey have antioxidant, antithrombotic, and vasorelaxation effects** which prevent the oxidation of bad cholesterol and blood clotting, resulting in the dilation of blood vessels.

How Arteriosclerosis Induces Cardiovascular Diseases

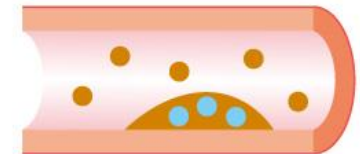
Early Stages of Arteriosclerosis

Excessive amounts of bad (LDL) cholesterol infiltrate through damaged vascular wall



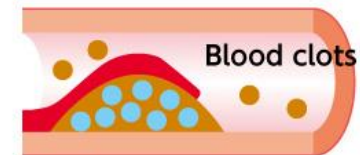
Arteriosclerosis

The bad cholesterol that infiltrated are oxidated and form a "lump" called plaque



Cardiovascular Diseases

When the damaged vascular wall bursts, blood clots will form in an attempt to treat the wound



^{✱5} Yaghoobi N, et al. Scientific World Journal (2008) 8, 463-469 ^{✱6} Ramli NZ, et al. Nutrients (2018) 10(8), E1009

^{✱7} Khalil MI, et al. African Journal of Traditional, Complementary, and Alternative Medicines (2010) 7(4), 315-321

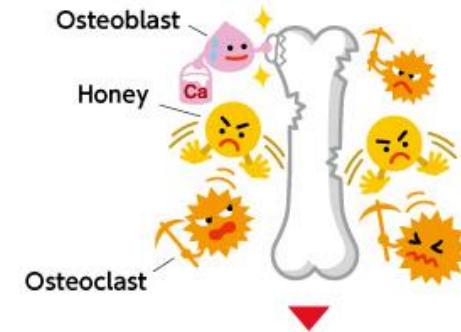


③ Strengthen Bones

Increases bone density and strengthens the bones.

Bone density decreases when osteoclasts activities which destroy bones outstrips osteoblast activities which make bones due to aging or calcium deficiency. In lab rat experiments by Universiti Putra Malaysia,^{※8} **honey was shown to increase bone density and strengthen the bones more than calcium, and is expected to prevent osteoporosis.** For instance, a hot milk made with calcium-rich milk and honey is like "adding wings to a tiger." Additionally, the clinical researches at the Semnan University of Medical Sciences^{※9} showed that **Milk with Honey improved sleep quality.**

How Honey Strengthens the Bones



Honey suppresses osteoclast activity to balance it against osteoblast activity.



※8 Zaid SS, et al. Clinics (Sao Paulo) (2012) 67(7), 779-784

※9 Fakhr-Movahedi A, et al. Clinical Nutrition ESPEN (2018) 28, 132-135



4 Alleviate Gastrointestinal Upsets

The antioxidant effects of honey and Manuka honey alleviates gastrointestinal upsets like gastroenteritis.

Autonomic disorders due to the overaccumulation of stress and fatigue, colds, and other anomalies can disrupt the balance of gastric acids and gastric mucosa in the stomach and lead to anorexia, an upset stomach, stomach pain, nausea, and more, and the excessive discharge of gastric acids in particular can result in gastritis and stomach ulcers.

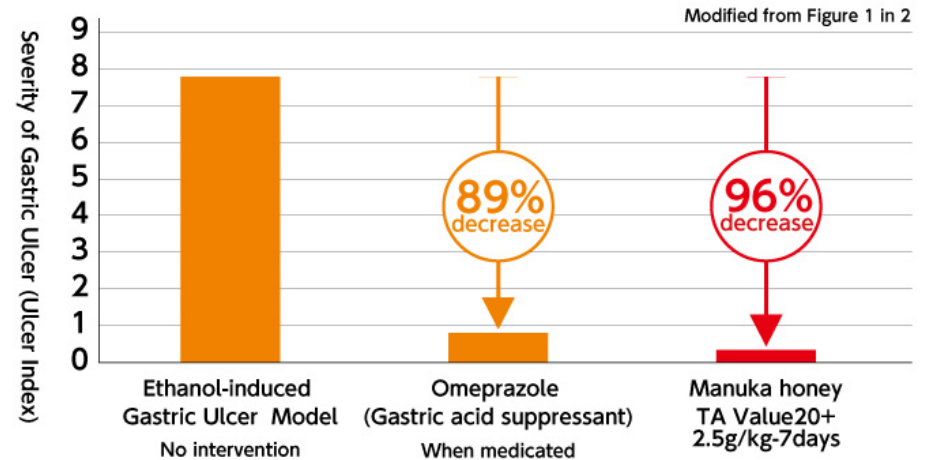
Additionally, the weakening of the rhythmical contraction (peristaltic movement) of the intestines can cause constipation while excessive movements can cause diarrhoea.

In an experiment involving rats, ^{※1}honey and ^{※2}Manuka honey showed to protect the gastric mucosa which was experimentally injected with ethanol and alleviate stomach ulcers and other gastrointestinal disorders through their antioxidant, anti-inflammatory, and anti-ulcer properties.

Furthermore, in another rat experiment, ^{※3}Honey and ^{※4}Manuka honey were able to alleviate colitis experimentally induced by acetic acid and other chemicals through the antioxidant effects of various polyphenols which they contain.

In cases of gastroenteritis caused by norovirus and rotavirus, the oligosaccharide and gluconic acid in Honey and Manuka honey induce intestinal regulation to alleviate diarrhoea symptoms and replenish energy and nutrition during bouts of anorexia.

Effects of Manuka Honey on the Severity of Gastric Lesions



※1 Ali AT, Scand J Gastroenterol (1991) 26(3), 281-288 ※2 Almasaudi SB, et al. Oxid Med Cell Longev (2016) ID3643824
 ※3 Mahgoub AA, et al. Trop Gastroenterol (2002) 23(2), 82-87 ※4 Prakash A, et al. Phytother Res (2008) 22(11), 1511-1519



5 Eradication of *H. pylori* and *E. coli*

Honey and Manuka honey may reduce the risk of being infected by *H. pylori* and pathogenic *E. coli*.

H. pylori stands for "Helicobacter pylori" and is a bacteria that makes its home in the gastric mucosa and mostly infects infants (less than 5 years old), while 50–60% of those aged 60 years old and above have contracted it, causing gastroduodenal ulcer and stomach cancer in middle-aged groups, and thus is of high concern.

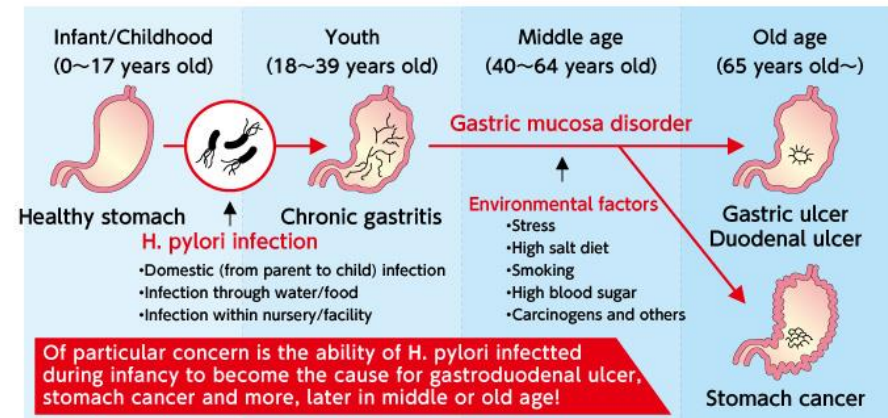
In-vitro experiments of Honey and Manuka honey have shown that they suppress the inflammation of the gastric mucosa and is believed to significantly reduce the risk of *H. pylori* reinfection and stomach cancer when consumed together with green tea and yogurt in particular.

On the other hand, there are around 170 types of pathogenic *E. coli* that cause diarrhoea and other disorders, but one of the most well-known is the enterohemorrhagic *E. coli* O157.

In-vitro experiments of Honey and Manuka honey have shown that they reduce the pathogenicity of Coliform bacteria like the enterohemorrhagic *E. coli* O157.

Of particular interest is Manuka honey's antibacterial effects against antimicrobial activation benefits against multidrug-resistant bacteria, such as methicillin-resistant staphylococcus aureus (MRSA) and pseudomonas aeruginosa which become resistant to new antibacterial drugs (antibiotics and others), and continues perpetually.

Development of Stomach Ulcer and Stomach Cancer Due to *H. pylori* Infection



※5 Abdel-Latif MMM, et al. Arch Med Res (2016) 47(5), 340-348 ※6 Lee JH, et al. Biofouling (2011) 27(10), 1095-1104

※7 Kumar ND, et al. J Clin Diagn Res (2014) 8(8), 29-31 ※8 Girma A, et al. PLoS One (2019) 14(10), 1De0224495



6 Cough suppressant effect

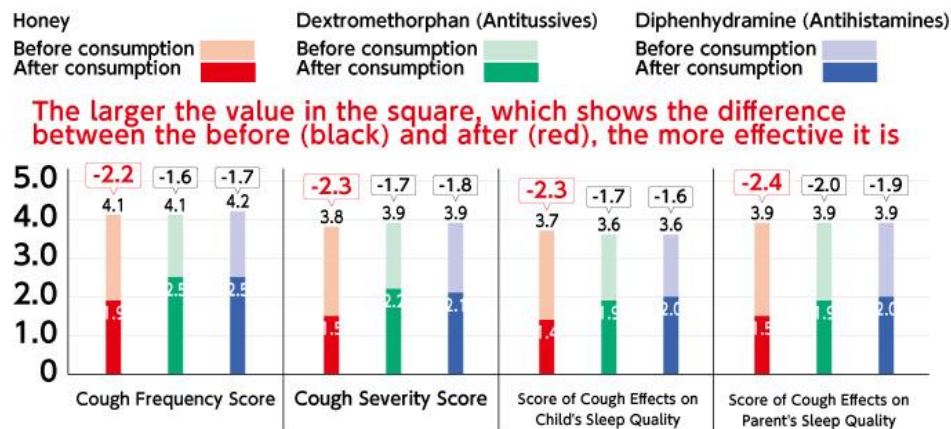
Honey soothes sore throats and coughs, improving sleep quality.

The Oxford University Medical School in the U.K. reviewed 14 related treatises evaluating the capability of Honey to soothe upper respiratory tract infection symptoms such as sore throats and coughs. The review article found that Honey showed better results than over-the-counter (OTC) drugs in terms of soothing upper respiratory tract infection symptoms like colds and influenza.※9

Similarly, clinical studies at the Shahid Sadoughi University of Medical Sciences in Iran found that feeding 2.5ml (half a teaspoon) of honey to children who coughed at night right before they sleep showed better results at soothing the coughs compared to antitussives like Dextromethorphan and antihistamines like Diphenhydramine, improving both the parents' and children's sleep quality without the risk of side effects.※10

During the winter season when the temperature drops and the air becomes dry, honey will help to alleviate sore throats and hoarseness in addition to coughs, asthma attacks, and the like, so daikon radish, ginger and karin fruit pickled in honey are also highly recommended.

Comparison between the effects of Honey and 2 other types of medicine on the soothing of coughs at night and sleep quality improvement



Research involved children suffering from coughs due to upper respiratory tract infections, where the Honey Group: 33, Dextromethorphan Group: 36, and Diphenhydramine Group: 34.

※9 Abuelgasim H, et al. BMJ Evid Based Med (2020) ID111336

※10 Shadkam MN, et al. J Alter Complement Med (2010) 16(7), 787-793

※Modified from Table 10 in 2



Manuka Honey Products List

Manuka Honey with Propolis



Propolis is made by bees from sprouts and resin. Containing beneficial nutrients like flavonoids, vitamins, minerals, and more, it is known as a natural antibiotic.

Manuka Honey with Royal jelly, Propolis



This is the most powerful honey in the history of Sugi Bee Garden, which has the nutritional components of propolis and royal jelly, and the antibacterial power of manuka honey.

Manuka Honey with Fresh Royal Jelly



Royal Jelly that is exclusively consumed by the queen bee. Being the only source of nutrition for the queen bee that continuously lays 1,500–3,000 eggs a day, it contains essential amino acids, vitamins, the unique decenoic acid, and more.

1 Antibacterial and Bactericidal Effects

Propolis exhibits infection prevention against not only bacteria but also fungi, viruses, and parasites.

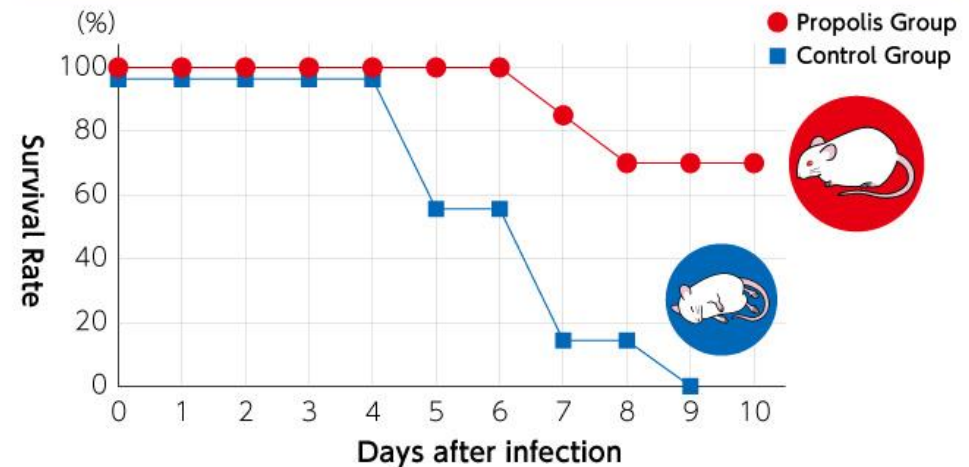
The numerous types of phenolic compounds inside Propolis have been shown to not only optimize your immune system but also directly suppress the activity and multiplication of pathogens like bacteria, fungi, viruses, and parasites.

In the case of bacteria, Propolis have been tested for antibacterial effects against over 600 types of bacteria including those which cause food poisoning, and have been found to be effective against oral bacteria which cause dental caries that and periodontal diseases.*¹²

While we combat fears of virus infections, it was found that in experiments that involved infecting mouse with the influenza virus through their nasal cavity and administering 10mg of ethanolic propolis extract (AF-08) to the Propolis Group (7 mice) and 10mg of ethanol only to the Propolis group (7 mice) for 7 days, 3 times a day after the infection, it was found, as shown in the figure, that the group that was administered with the Propolis (AF-08) had a higher survival rate than the control group.*³

Moreover, there is now evidence that green Propolis suppresses cytokines that aggravate COVID-19 symptoms and reduce the risk of cytokine storms.*⁴

The benefits of Propolis on the survival rates of mouse infected with influenza



*1 Przybyłek I and Karpinski TM, Molecules (2019) 24(11), ID24112047 *2 Abbasi AJ, et al. Ethiop J Health Sci (2018) 28(4), 505-512

*3 Shimizu T, et al. Antivir Chemother (2008) 19(1), 7-13 *4 Berretta AA, et al. Biomed Pharmacother (2020) 131, ID110622

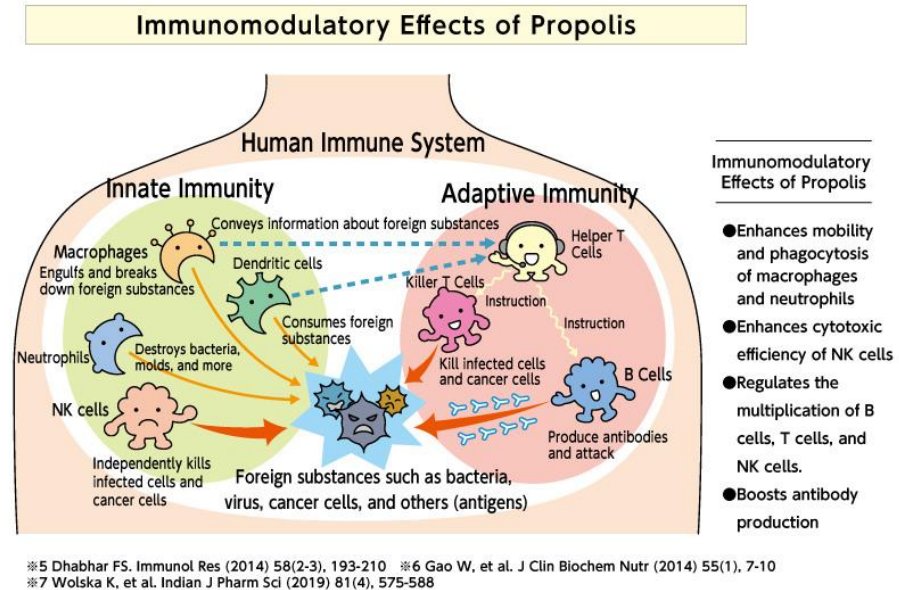
2 Immunomodulation

The various phenolic compounds in Propolis modulate cell collaboration in immune response

The human immune system is divided into "innate immunity" comprised of macrophages, neutrophils, Natural Killer (NK) cells, dendritic cells, and more that continuously monitors cell activities in our body and quickly prepares to go on the offensive when foreign substances (antigens) are detected and "adaptive immunity" like B cells, T Cells, and more that create memory antibodies to fight off antigens that infiltrate the body a second time.

Ageing, chronic stress, and other factors may reduce both innate and adaptive immunity in quantity and quality, but experiments on aged mice have found that **compounds such as Caffeic Acid Phenethyl Ester (CAPE), Artepillin C, and more found exclusively in Brazillian green Propolis benefited both innate and adaptive immunity, preventing the loss of immune functions and eased inflammatory reactions.**^{※5}

According to the review article published by the University of Natural Sciences and Humanities in Poland, Caffeic Acid Phenethyl Ester (CAPE), Artepillin C, and the like modulates cell collaboration in the immune system to optimize their functions, as shown in the figure.^{※7}



③ Prevents Dementia

Propolis prevents and ameliorates dementia caused by Alzheimer's disease and vascular dementia.

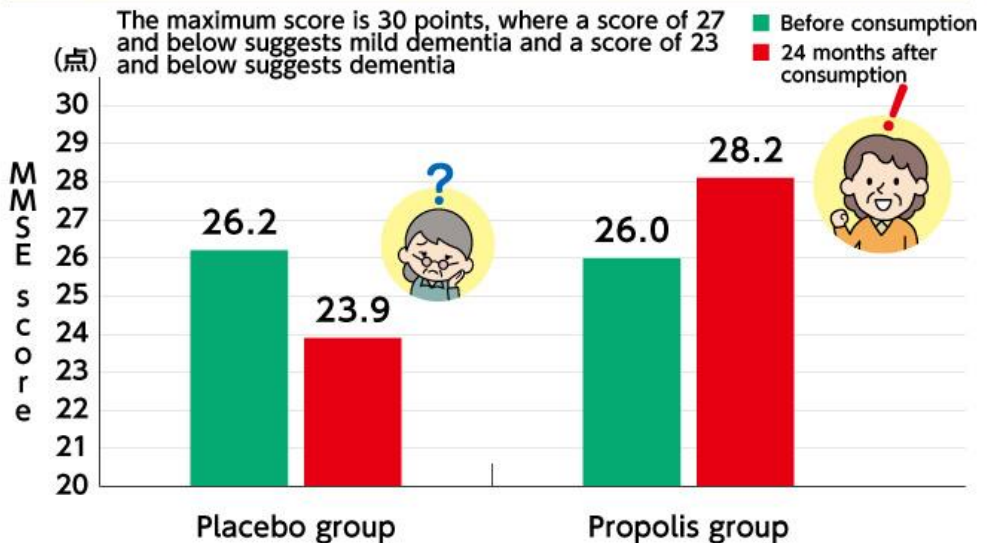
Dementia is the loss of cognitive functioning due to the rapid destruction and loss of the brain's neurons and is caused by factors as Alzheimer's where harmful proteins accumulate inside the brain and vascular dementia that is triggered by strokes.

In experiments on mice, the Caffeic Acid Phenethyl Ester (CAPE) extracted from Propolis was able to reduce neuroinflammation caused by the accumulation of harmful proteins inside the brain and prevent the onset of Alzheimer's.^{※8}

Meanwhile, the Pinocembrin extracted from Propolis showed in experiments on rats that it can reduce memory impairment caused by vascular dementia.^{※9}

In a study involving 60 senior citizens staying at high altitudes which increases the chances of early onset of memory impairment compared to those living at lower altitudes, they consumed 830mg of Brazilian green Propolis a day for 24 months, and comparison of the MMSE (Mini-Mental State Exam) score of the Propolis group and placebo group revealed that the score for the placebo group dropped while the score for the Propolis group increased, as shown in the figure, suggesting that **Propolis reduces neuroinflammation and improves deteriorated cognitive functions.**^{※10}

Cognitive Decline suppresses Propolis Consumption



※8 Hao R, et al. Food Chem Toxicol (2020) 144, 111636

※9 Kang ZC, et al. Drug Des Devel Ther (2020) 14, 3577-3587

※10 Zhu AZ, et al. J Alzheimers Dis (2018) 63(2), 551-560



1 Relief of Menopause

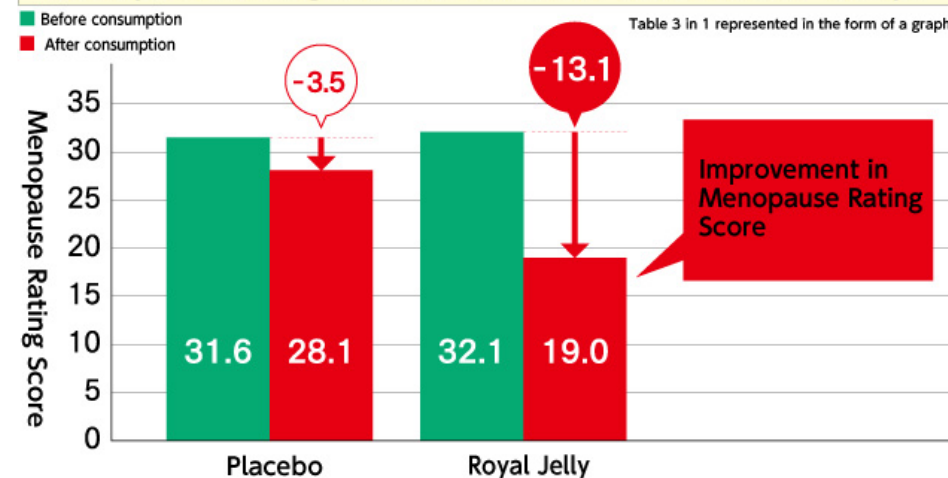
Decenoic acid and decanoic acid found uniquely in Royal Jelly acts in similar ways to female hormones.

Honey bee secretions contain fatty acids such as decanoic acid (10-hydroxy-2-decenoic acid) and decanoic acid (10-hydroxydecanoic acid), which are unique to Royal Jelly.

In controlled clinical researches involving menopausal women at the Hormozgan University of Medical Sciences in Iran, the group consuming 1g of Royal Jelly a day for 8 consecutive weeks showed a change in their score on the menopause rating scale (MRS) from 32.1 to 19.0, while the lactose placebo group changed from 31.6 to 28.1, showing significant differences. They also found that the **decenoic acid and decanoic acid** which have a female hormones (estrogens) like activity, mainly **relieves menopause symptoms**. Furthermore, controlled clinical trials at the Iranian School of Medicine found that consuming 1g of Royal Jelly a day for 2 months **relieved PMS syndromes as frustration, dry skin, constipation and more**.

In conclusion, **Royal Jelly is very reliable for alleviating various symptoms caused by the decrease and imbalance of female hormones such as autonomic dysfunction, anxiety, frustration, forgetfulness, and more.**

Menopause Rating Scale (MRS) Score Trend in Both Groups



※1 Sharif SN, et al. Complementary Therapies in Clinical Practice (2019) 37, 47-50

※2 Taavoni S, et al. Complementary Therapies in Clinical Practice (2014) 22(4), 601-606

2 Improvement in Overall Health

Improves fatigue and coldness, including metabolic syndrome-like constitution.

The most desirable health improvement is tend to be the easing of metabolism disorders including obesity. Metabolic syndrome is a condition in which any two or more of dyslipidemia, hyperglycemia, and hypertension are applicable in addition to visceral fat obesity.

In a clinical research at the University of Primorska in Slovenia,^{※3} the group who took 666 mg of royal jelly daily for 8 weeks was followed up immediately after the study or two months later, which **showed improvement in body fat percentage, bad cholesterol (LDL) and fasting blood sugar**, while the amount of appetite suppressant hormone (Leptin) secreted increased, and **appetite and negative emotions were suppressed**.^{※4}

Furthermore, in tests by POLA Inc. on mice, they found that compared to the placebo group, the group that consumed fresh Royal Jelly had higher rates of recovery from physical fatigue after performing physical activities.^{※5}

Additionally, a controlled research test at Ehime University found evidence that **Royal Jelly reduced cold intolerance by promoting blood flow to the skin** among other factors.

Potential Health Benefits of Royal Jelly and the Corresponding Scientific Proofs

- **Slim Down**
Reduce body fat ratio and BMI
- **Suppress appetite**
Promote secretion of appetite suppressant hormone
- **Change of pace**
Suppress negative thoughts
- **Reduce fatigue**
Improve swimming endurance after rest
- **Improve Dyslipidemia**
Reduce bad cholesterol (LDL) level
- **Improve Chyperglycemia**
Lower fasting blood sugar level
- **Improve cold intolerance**
Raise finger skin temperature
- **Prevent chronic inflammation**
Reduce level of C-reactive protein (CRP)



※3 Petelin A, et al. Evidence-Based Complementary and Alternative Medicine (2019) Article ID 4969720, 11pages

※4 Kamakura M, et al. Journal of Nutritional Science and Vitaminology (2001) 47(6), 394-401

※5 Yamada N, et al. Japan Society of Nutrition and Food Science (2010) 63(6), 271-278

3 Promote Longevity

The queen bee consumes Royal Jelly continuously and lives 30–40 times longer than worker bees.

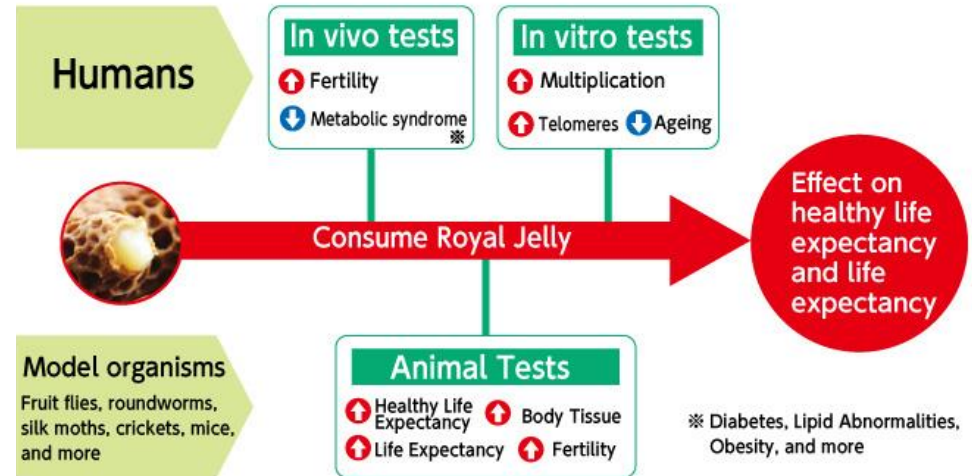
The queen bee consumes Royal Jelly as its staple food 4 days after she hatches and grows to 2–3 times larger as well as lives an astounding 30–40 times—3–4 years—longer compared to worker bees.

According to the review article entitled "Royal Jelly and its compounds promotes healthy ageing and longevity" by the National Center of Neurology and Psychiatry,^{※6} Royal Jelly is a well-balanced and nutrient-dense food similar to Honey, and the 9 types of "major Royal Jelly proteins (MR-JP)" including the popular Royalactin play important roles in stabilizing cell metabolism and growth to improve longevity.

In addition, studies at the Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology involving roundworms^{※7} also found that the **unique decenoic acid in Royal Jelly contributed to longevity through the body's dietary (calorie) restriction mechanism.**

Other than in honey bees, the longevity benefits of Royal Jelly have been proven in other organisms such as house flies, roundworms, silk moths, crickets, mice, and more, but more research is required to verify its effects on longevity in humans.

Potential Lifespan-Extending Effects of Royal Jelly



※6 Kunugi H, et al. International Journal of Molecular Sciences (2019) 20, Article ID 4662, 26 pages

※7 Honda Y, et al. Journal of Aging Research (2015) Article ID 425261, 7 pages