

Melanine and Propolis in the Treatment of COVID-19

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Received: May 14, 2020; **Published:** September 10, 2020

Abstract

In the treatment of coronavirus, programs should be developed in which bee products and herbs will dominate - my many years of experience in apiculture confirm this hypothesis. I pay special attention to propolis, honeydew honey, royal jelly and pollen. Tea from herbs - peppermint, sage, nettle, larch and pine syrup, plus bee putty, has health properties for coronavirus treatment. Nature cures all diseases and is a cure for coronavirus, shows us that products containing melanin (chokeberry, blueberry, blackberry, cranberry, red beet, wild elderberry, black currant, cope with fighting coronavirus. The second source of melanin is sunbathing in the sun A good therapy for coronavirus is also inhalation of air from the hive, The air filling the hive house is free of bacteria, viruses and pathogenic fungi. Prophylaxis and stay in such a room is called ulotherapy. The smell of fresh honey, propolis, wax, bee pollen has a beneficial effect on the central system nervous, respiratory, cardiovascular, sleep quality is completely improved.

Keywords: *Coronavirus; Propolis; Melanin; Bee Products; Apitherapy*

Introduction

Enzyme drugs should be introduced to fight coronavirus. Enzymes are very important in the defense against cancer and viruses. Medical statistics indicate that coronavirus attacks older people more often, when the body produces fewer and fewer enzymes, and with aging there is also loss of melanin in the human body [1,2].

A civilization diet low in enzymes and coenzymes weakens the body and its defense mechanisms sufficiently. A wholesome diet rich in salads and high melanin content, rich in enzymes and coenzymes, effectively protects against coronavirus and other diseases [3].

Enzymes are assigned the role of not only biochemical biocatalysts, but they are also believed to act as transistors and nanoprocessors [4,5].

Enzymes can be considered as fragments of information machinery that provide information that enables biochemical reactions [6].

Professor Simon pointed out that for most of the population, the virus is usually not a big threat, because the severe and life-threatening course of the disease is mainly experienced by the elderly and people with comorbidities.

Coronavirus exists in four types: alpha, beta, delta and gamma. The carriers of these viruses are usually mammals or birds. It's hard to grow them in laboratory conditions. In the history of medicine, humans have also proved to be the source of coronaviruses, especially in the case of the epidemic of SARS, which was very loud several years ago. Not many years later, the news spread about the MERS virus. Coronaviruses are common and tend to mutate at various genomic levels. Coronavirus infection can cause flu-like symptoms. Therefore, special attention should be paid to cases of sudden fever, runny nose, cough, general weakness of the body, headaches and muscles. The virus can also affect your eyes.

Spread of the coronavirus - COVID-19

COVID-19 coronavirus, like flu, can spread from person to person. COVID-19 infection is highest when we contact a person with symptoms of this virus, e.g. when the person sneezes, speaks and spreads droplets containing the virus, but the communication process must be a short distance away, or when we come into contact with objects that were used by this a person. If you touch these surfaces or objects and then touch your mouth, nose or eyes, you can get the virus.

SARS-CoV-2 coronavirus has spread throughout the world. Initially, the largest outbreak was in China, now the coronavirus has moved to Europe and gone all over the world. Experts wonder why so few cases of coronavirus infection have been diagnosed in Africa. They can't explain why a relatively small number of coronavirus infections have been recorded in Africa so far, writes New Scientist on its website. The most infected are in Egypt, Algeria and South Africa. Experts point out that it's very difficult to explain.

The author explains this phenomenon by the structural resources of melanin in the human biological system, and quantum processes occurring in melanin and neuromelanin.

African people have large resources of melanin in their bodies due to the fact that the sun is intensely shining and is responsible for the synthesis of melanin. Melanin, apart from the biological and chemical side, also presents the bioelectronic side.

Biologically, melanin has antibacterial activity, says Australian biologist James Mackintosh. He noticed that melanin in some animals forms some kind of capsules around skin-attacking pathogens, thus preventing disease. Laboratory studies have shown that melanosomes contained in human skin can protect the body against the invasion of „microorganisms. Raspberry is a sticky molecule. Bacteria, fungi and viruses are „glued” by it and stop reproducing [7].

In Poland, in Silesia, there are a large number of coal mines, in these areas the pandemic index is the highest in Poland. Compared to other areas, it exceeds up to 400%.

The author of the study conducted a study on 1560 miners who were diagnosed with coronavirus. The study was conducted in terms of age, place of residence, eye color, which determine the resources of melanin in the biological system.

Statistical calculations

The respondents' age ranged from 22 to 55 years.

Place of residence; city- 945 respondents = 60.5% infected.

village - 615 respondents = 39.5% infected.

Viral infection by age

Age range from 22 years to 30 years - 11% infections.

31 years to 40 years 37% of infections.

41 years to 55 years 52% of infections.

Examination for eye colors

Blue eyes - 58% of infections.

Hazel eyes - 2 9% infections.

Black eyes - 13% infections.

Therapy

It was recommended to use a melanin diet (eating foods that contain large amounts of melanin), drinking herbal teas and propolis, combined with pine or larch syrup. The choice of herbs was any - rose fruit, fruit and lilac flower, linseed, poplar leaf, walnut leaf, horsetail, sage herb, mint leaf, lemon balm leaf, chamomile, nettle herb.

Eating honeydew honey or royal jelly was recommended. Forest ant venom also produces good results in therapy. We give a handkerchief to the anthill for 2 minutes, take the handkerchief and smell it close to the nose, it opens the lung tubules and the respiratory tract.

The therapy lasted from 3 to 10 days, Result from treatment - 92% of respondents recovered within 10 days with family members.

8% of the respondents required hospital treatment because of other comorbidities, but no patients died. It was recommended to take care of personal hygiene. Great contact with nature - pine forest, larch, poplar. The body should be in constant motion, sunbathe in the sun, because the sun is a producer of melanin.

We care about mental well-being and avoid stressful situations. People over the age of 60 have less melanin in the body, so you should continue an active lifestyle in order to activate it through movement and build psychosomatic well-being. We put purchased food products in the oven at 100 degrees for 2 minutes. A coronavirus at 65 degrees loses life.

Bio-electronic life model and electronic properties of melanin

Human life is not only a matter of biology and biochemistry, it is also a quantum-cybernetic-information and bioelectronic construction that has an impact on human health, illness and behavior. This bioelectronic construction creates homo electronicus along with its electronic personality. In addition to traditional, well-known biochemical reactions occurring in living organisms, a new reality opens up for science, functioning based on the bioelectronic model of life. Proteins, melanins, nucleic acids, bones, muscles, etc. are electronic material with piezoelectric, pyroelectric, ferroelectric and semiconductor properties [8].

The human biological system, apart from the biochemical route, uses information transfer by means of electromagnetic, acoustic, soliton, electric, electromagnetic, spin and bioplasma fields. This communication is applicable not only in biological processes, but also in all mental functions. The control of the human biological system is made through a network of information channels: electron, ion, photon, phonon, soliton, spin, as well as bioplasmic - each of these channels can be in itself an information carrier for the biological system, or can function collectively in a bioplasma system [9].

Melanin and neuromelanin are responsible for central control of all biological, physiological and mental processes. Piezoelectricity plays an important role in the biological system. The piezoelectric effect is the conversion of mechanical energy into electricity, along with the formation of electricity accompanied by an electric field [10].

A piezoelectric placed in an alternating electric field is deformed generating an acoustic wave. This phenomenon is referred to as electrostriction or a quantum-acoustic effect. The ability of piezoelectric crystals to polarize at the expense of mechanical interactions and the ability to deform at the expense of applied electric fields allows them to be considered in the category of electromechanical transducers [10].

Every organism acquired piezoelectric properties along with its formation on Earth and they are needed to run bio-electronic processes that are necessary for the functioning of the body. These processes occur throughout the body, but are particularly noticeable in the circulatory, muscular and skeletal systems during walking and exercise, respiratory, mechanorecept, baroreception, sense of hearing, as well as during sexual arousal, etc. Among these systems or senses, a stimulating role it plays mechanical, hydrostatic and acoustic energy, which polarizes biological piezoelectrics, thus becoming information carriers in the form of an electric field and acoustic wave for the biological system.

Shamos and Lavine [11], made detailed measurements of piezoelectric effects in the bones of long people during walking and mechanical support, which generate an electric field. This field is needed by the body to:

- Activation of enzyme work and communication [12]
- Recording of perceptual impressions in the brain; [13].
- Melanin synthesis [3].
- Integration of the biological system into a whole in the cell-tissue-organ hierarch organism, ecosystem. High speed of information transfer in living organisms this proves that coordination at different levels of biological complexity requires carriers with a minimum energy demand and more informative.

Melanin in electronic and physical terms has the following features:

- Ability to proton conductivity [14].
- Ability to absorb light of all wavelengths.
- Properties of photoconductor and amorphous semiconductor [15].
- Increased resistance to light and ultraviolet.
- Generating excited electrons and photons [16].
- High oxygen demand [17].
- Selective susceptibility to phonons - this means that cells possessing melanin are selectively susceptible to acoustic and ultrasonic waves [18,19].

Acoustic waves of low intensity but at the right frequency may contribute to the disruption of enzymes. Tissue cells combined and collagen may be exposed to the sound wave that causes:

- Can act as a photon to phonon converter and reverse process [19].

Melanin and neuromelanin absorb and convert electromagnetic energy into acoustic energy and vice versa, they also have the ability to convert the electromagnetic wave into spin fields in which solitons responsible for unconscious states thicken [20].

The conversion of light into sound (photon into phonon) is information for the body not only for biological processes, but especially mental processes, which occurs in synesthesia, winter depression, in the adaptation process to the environment, in ADHD, etc.

- Exhibits paramagnetic properties of melanin [21].
- Melanin is a piezoelectric - it emits an acoustic wave under the influence of an alternating electric field. In addition, all melanins of the biological system show a variety of physical properties such as absorption, disappearance of light and sound, binding of organic chemicals, storage of liquids and gases [22].

Melanin as a free radical is capable of creating quantum states of entangled particles, atoms, or entire information structures and images created in the bioplasm of melanin and neuromelanin. Changing the setting of nuclear spin is associated with a change in the intensity of the spin field, or soliton field, which is attributed to responsibility for the nature of psychosomatic processes and teleportation of psycho-physiological phenomena noticeable e.g. in myths [23].

Solitons are independent entities, they are a lonely moving impulse of high power, which does not blur when in contact with another particle, wave, or field. There are light, water and sound solitons, which can interact strongly with other solitons, but retain their form and structure unchanged after the end of the interaction [24].

Transmission of soliton signals occurs not only to biological structures, but also to the mental and spiritual sphere - these are our mental, emotional and conscious sensations. Solitons can spread throughout the Universe, without fading, they are from the beginning of the appearance of life to the present moment. The space has been densely filled with a soliton network, carrying content and meaning. Information (soliton) fields can affect energy systems with almost no energy loss and cause major changes in the biological system. These fields and thoughts can interact with each other and are associated not only with the biosphere, but also with the noosphere. Their variety of densities is endless. The brain has the ability to generate and receive information fields [25,26].

The brain and any genetic code replication system has transmitting and receiving antennas that transmit space „directives” [27].

Nature of bees in the treatment of virus and other pathogens

Bees have evolved various mechanisms to combat parasites and pathogens.

The first line of defense is the epidermis, which is both a mechanical and a biochemical barrier encompassed by antimicrobial compounds [7].

Insects have developed a second line of defense as an innate immune system based on cellular and humoral responses [28,29].

Humoral defense is based on the secretion of antimicrobials (e.g. defensin, abaecin or himenoptacin in honeybees;[30], the use of reactive oxygen intermediates as killing molecules and activation of the enzyme cascade responsible for regulating melanization. As we can see, bees are seeking melanin richness [31].

Enzymes are protein transformation catalysts in living organisms necessary for any chemical and biological reaction. Thanks to enzymes, all biochemical reactions can take place quickly at normal body temperature and normal pH. In the absence of enzymes, the rate of biochemical reactions would be very slow. Our health depends on their activity and efficiency.

The author's research shows that bee pollen and royal jelly containing large amounts of enzymes play an important role in the treatment of coronavirus. Bee pollen it f are pollen that is mixed with honey, honey enzymes and digestive acids. It is folded in honeycomb frames and is subjected to lactic fermentation caused by *Lactobacillus* sticks. Bee pollen are easily absorbed by the human body. It has an extremely impressive composition. It contains a lot of protein, sugar, lactic acid, vitamins (A, B1, B2, B12, C, PP, E, D, K, H) as well as

macro- and microelements, among others phosphorus, potassium, calcium, sodium, magnesium, iron, zinc. Enzymes (including invertase, catalase, lipase, lactase) are also numerous in this product. It also has nutritional, antibacterial, strengthening and antiviral properties.

A similar product is royal jelly. The composition of royal jelly contains a set of exogenous amino acids, carbohydrates, enzymes, lipids, natural hormones, mineral compounds, phosphorus compounds and acetylcholine. Acetylcholine in its natural form occurs only in royal jelly and plays a key role in transmitting nerve impulses between cells. Royal jelly largely contains gamma globulins, which stimulate the immune system and undertake effective fight against infections. Thanks to this, it helps in the fight against many diseases, especially those associated with reduced immunity. It is also an effective antibacterial and antiviral agent [32].

Enzymology (the study of enzymes) is extremely extensive, and its development can not only bring scientific progress, but also can contribute to the development of medicine in not only treatment but also diagnostics.

At the collective level, in addition to individual defense of bees in fighting infection, they have developed a package of „social resilience” [33].

These behaviors are primarily used to limit infection and the transmission rate of the disease in the colonies. Honey bees receive antibacterial substances from vegetable resins (e.g. black poplar and aspen poplars, etc.) which are mixed with bee putty - propolis to form a paste that is distributed in the nest of bees [34,35].

Propolis reduces the intensity of pathogens such as P. larvae (split pneumonia, which is characteristic of coronavirus) [30,36].

Another key preventive strategy is spatial segregation - a reduced amount of brood, which aims to reduce infection by parasites and pathogens [37].

Honey bees also exclude infected individuals from the colony [38], destroy them, or by „self-destructing”, such as spontaneous leaving the nest to prevent further contamination of the colony [39].

Another way to save bee colonies is that infected individuals have to spend more time outside the colony [40].

Bees also developed behavioral action, called „social fever”, as a result of which honey bees move the air in the hive with wing movements, and from the piezoelectric side release an electric field (biological field) common to the entire colony, and temperature in the hive to levels that are fatal to parasites but not to bees [41].

Many insects to combat parasites and pathogens change their nutrient intake to activate their immune system [42].

According to this author, bees are starving, which leads to anorexia.

Therapy and prevention

1. Sunbathe to increase the level of melanin in the human biological system. We omit the solarium, because it leads to skin cancer. Research shows that people with white skin catch the coronavirus faster.
2. The lack of melanin in the body is supplemented by products with a dark structure, blueberries, chokeberry, blackberry, raspberry, wild lilac, plum, red beet, grape, currant, cranberry
3. In sickness, we avoid high-pitched sounds because they interfere with melanin synthesis and block phonon-to-photon conversion. Melanin has a selective susceptibility to phonons - this means that cells carrying melanin are selectively susceptible to ac-

ustic and ultrasonic waves. Disruption of this mechanism leads to the pathological action of melanins in terms of bioelectronics, which affects somatic disorders.

4. When diagnosing a patient, we avoid devices emitting ultrasound waves because they strongly activate the development of the disease.
5. Drinking herbal teas, propolis and pine juice, or larch juice. We choose herbs such as: mint leaf, rose fruit. Fruit and elderberry flower, chokeberry fruit, horsetail herb, sage herb, chamomile, nettle herb etc. Brew the herbs in boiled water with pine or larch juice. These juices play a very important role in combating coronavirus. Coronavirus Patient Statistical Registry shows that people living near a pine or larch forest are not on the sick-list or represent a very low percentage. This state of affairs shows that pine and larch oil eliminate the pandemic factor.
6. A mixture of honey with propolis and pollen or royal jelly. We beat the bee pollen to break the testicles, because there is valuable protein there. Take the honey in a small spoon. Give it 5 to 7 drops of propolis. We mix it and eat it in the morning before breakfast. During illness, we take a tablespoon of honey, about 40 drops of propolis, a few drops of royal jelly and a little bee pollen. We mix it all up and eat it early in the morning.
7. We take care of personal hygiene, do not panic, we eat more regional vegetables, we avoid carbonated waters. We drink natural water from a good source.
8. A lot of contact with nature, we do not wear masks, because it develops a pandemic.
9. We care about psychological well-being, we avoid stressful situations.
10. The body should be in constant motion and we avoid colds.
11. People over 60 have less melanin resources, so they should have a more active lifestyle, to increase melanin y to build well-being psychosomatic.
12. Do not rub your eyes, mouth and nose with your fingers, because these membranes are sensitive to irritation and you can quickly infect your body.

Summary

Enzyme drugs should be introduced to fight coronavirus. Enzymes are very important in the defense against cancer and viruses. This statement is supported by the fact that coronavirus attacks older people more often, when the body produces fewer and fewer enzymes. A civilization diet low in enzymes and coenzymes weakens the body and its defense mechanisms sufficiently. A wholesome diet rich in salads and high melanin content, rich in enzymes and coenzymes, effectively protects against coronavirus and other diseases.

A valuable medicine to combat coronavirus are bee products: like propolis, bee pollen, royal jelly, containing large amounts of enzymes, pollen, honey, but also tinctures and larch juice, as well as fruits and vegetables containing large amounts of melanin. At each stage of the disease, the patient should be in motion, use active body massage, a sudden change in temperature, to activate the electric field from the polarization of biological piezoelectric and pyroelectric, which direct the mechanism of breathing. Artificial respiration should be used because it activates the alveoli, which, as mechanoreceptors, polarize protein structures in the alveoli and release an electric field that directs the breathing process.

A very significant factor in the treatment of coronavirus is the sun, when sunbathing, a change in skin color appears on the human body,

there is an increase in melanin, which easily copes with coronavirus. Lack of sun develops a pandemic, this can be seen among miners.

Pine oil plays an important role in the treatment of coronavirus. In laboratory conditions, it has a strong antibacterial, antifungal and antiviral effect, combating, among others pathogens such as *Candida albicans*, *Streptococcus pyogenes*, *E. coli*, gram-negative bacteria causing intestinal infections and *Salmonella*, herpes viruses and influenza A, and even streptococcus, responsible for angina and sepsis, and *Staphylococcus aureus*.

Pine oil also has expectorant and phlegm-dissolving properties, being a natural support for upper respiratory tract infections with runny nose and coughing. In combination with eucalyptus oil, it allows you to unblock a blocked nose, which is worth using during illness by placing a bowl of water next to the bed and a mixture of both oils.

In aromatherapy pine oil is also recommended as a psychological stimulator. Observations indicate that sprayed at home or used for inhalation, it can improve concentration, support the memory process, as well as calm broken nerves and relieve depression.

Bibliography

1. Sarna T, *et al.* "Loss of melanin from human RPE with aging: Possible role of melanin photooxidation". *Experimental Eye Research* 76 (2003): 89-98.
2. Schmidt SY and RD Peisch. "Melanin concentration in normal human retinal Pigment epithelium: Regional variation and age-related reduction". *Investigative Ophthalmology and Visual Science* 27 (1986): 1063-1067.
3. Adamski A. "Melanina, enzymy, melatonina w zdrowiu i chorobie". Rybnik: Wydawnictwo Magnum (2005).
4. Wnuk M. "Enzymy jako nanoprocesory – perspektywa bioelektroniczna". *Roczniki Filozoficzne. T. XLI I I, 3* (1995): 127-149.
5. Wnuk M. "Istota procesów życiowych w świetle koncepcji elektromagnetycznej Natury życia". Lublin: Rozprawa habilitacyjna. Red. Wyd. KUL Lublin (1996).
6. Stonier T. "Information and the Internal Structure of the Universe, Springer (1990).
7. Mackintosh JA., *et al.* "Antimicrobial mode of action of secretions from the metapleural gland of *Myrmecia gulosa* (Australian bull ant)". *Canadian Journal of Microbiology* 41 (1995): 136-144.
8. Sedlak W. "Bioelektronika 1967-1977". Warszawa (1979).
9. Sedlak W. "Homoelectronicus". Warszawa (1980).
10. Krajewski T. "Zagadnienie fizyki dielektryków". PWN. Warszawa (1970).
11. Shamos MH and Lavine L. "Piezoelectric effect in bone". *Nature* 197 (1963): 81-93.
12. Shimomura M. "Electronic communications between molecular associates and Enzymes Kagaku Kyoto 46.8 (1991): 571-576.
13. Adamski A. "Rola procesów bioelektronicznych w kształtowaniu percepcji Zmysłowej i funkcjopsychicznych człowieka". Wyd. Uniwersytet Śląski. Katowice (2006).
14. Matuszak Z. "Modelowanie komputerowe własności donorowo- akceptorowych melanin". Wyd. Current Topics in Biophysics. XI Zjazd Polskiego Towarzystwa Biofizycznego, Cieszyn 5-7 wrzesień. (2001): 80-89.
15. Crippa PR., *et al.* "A band model for melanin deduced from optical absorption and photoconductivity experiments". *Biochimica et Biophysica Acta* 538 (1978): 237-248.

16. Nicolaus RA. "Coloured organic semiconductors: melanins". *Rendiconto. Dell. Accademia delle Scienze Fisiche e Matematiche* (1997): 325-360.
17. Prota G. "Melanins and related metabolites in Black Skin". W. Montagna, G. Prota, J. Kenney (1993): 73-99.
18. Sarna THM and Swartz HM. "The Physical properties of melanins". Oxford University Press 25 (1985): 333-357.
19. Mc Guinness JE., *et al.* "Amorphous semiconductor switching in melanins". *Science* 183 (1974): 853-854.
20. Adamski A. "Homo electronicus jako nowa rzeczywistość w psychologii". [In: Różne Rodzaje promieniowania jako wyzwanie, szansa i zagrożenie dla Bezpieczeństwa człowieka. (Various types of radiation as a challenge, opportunity and risk for human safety). Red. nauk. Marian Cieślarczyk, Agnieszka Filipek, Andrzej W. Świdorski, Joanna Ważniewska, Monografie nr.140. Wyd. Uniwersytet -Przyrodniczo- Humanistyczny w Siedlcach (2013).
21. Swartz H and Sarna T. "Paramagnetism in melanins: origin of the intrinsic free radical". First meeting of the European Society for Pigment Cell Research, Sorrento (1987): 11-14.
22. Bruno JR and Nicolaus RA. "A critical review of the function of neuromelanin and an attempt to provide an unified theory". *Medical Hypotheses* 65 (2005): 791-796.
23. Bouwmeester D., *et al.* "Experimental quantum teleportation". *Nature* 390 (1997): 575-579.
24. Brizhik L. "Soliton mechanism of charge, energy and information transfer in biosystem -Wyd". World Scientific Publishing . Co Ptc . Ltd 981.7 (2003): 238-419.
25. Adamski A. "W poszukiwaniu natury świadomości w procesach kwantowych, Wydawnic two Uniwersytetu Śląskiego w Katowicach. Katowice (2016). Development of mental processes". *Journal of Advanced Neuroscience Research* 3 (2016): 24-31.
26. Adamski A. "The importance of movement, solitons and coherent light in the Development of mental processes". *Journal of Advanced Neuroscience Research* 3 (2016): 24-31.
27. Edmundson DE and Enns R.H. "The particle-like nature of colliding light bullets". *Physical Review* 51 (1995): 2484-2498.
28. Schmid-Hempel P. "Evolutionary ecology of insect immune defenses". *Annual Review of Entomology* 50 (2005): 529-551.
29. Tsakas S and Marmaras V. "Insect immunity and its signalling: an overview". *Invertebrate Survival Journal* 7 (2010): 228-238.
30. Antúnez K., *et al.* "Efficacy of natural propolis extract in the control of American Foulbrood". *Veterinary Microbiology* 131 (2008): 324-331.
31. Vass E and Nappi AJ. "Fruit Fly Immunity". *Bio Science* 51 (2001): 529.
32. Joško F and Gala J. "Pszczoły i ich lecznicze produkty". Wyd. Sądecki Bartnik; Nowy Sącz (2003).
33. Cremer S., *et al.* "Social Immunity". *Current Biology* 17 (2007): 693-702.
34. Simone M., *et al.* "Resin collection and social immunity in honey bees". *Evolution* 63 (2009): 3016-3022.
35. Simone-Finstrom M and Spivak M. "Propolis and bee health: the natural history and significance of resin use by honey bees". *Apidologie* 41 (2010): 295-311.
36. Kamel AA., *et al.* "Propolis As a natural antibiotic to control American foulbrood disease in honey bee colonies". *African Journal of Agricultural Research* 8 (2013): 3047-3062.

37. Stroeymeyt N., *et al.* "Organisational immunity in social insects". *Current Opinion in Insect Science* 5 (2014): 1-15.
38. Baracchi D., *et al.* "Evidence for antiseptic behaviour towards sick Adult bees in honey bee colonies". *Journal of Insect Physiology* 58 (2012): 589-1596.
39. Rueppell O., *et al.* "Altruistic self-removal of health-compromised honey bee workers from their hive". *Journal of Evolutionary Biology* 23 (2010): 1538-1546.
40. Alaux C., *et al.* "Parasitic and Immune modulation of flight activity in honey bees tracked with optical counters". *Journal of Experimental Biology* 217 (2014): 3416-3424.
41. Starks PT., *et al.* "Fever in honeybee colonies". *Naturwissenschaften* 87 (2000): 229-231.
42. Povey S., *et al.* "Dynamics of macronutrient self- medication and illness-induced anorexia in virally infected insects". *Journal of Animal Ecology* 83 (2014): 245-255.

Volume 12 Issue 10 October 2020

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