AgriBiotech e-Newsletter
Volume:01, Issue: 06, October 2021
ISSN:
Article No. 04

Bee Pollen- Health Benefits

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SUMMARY

Bee pollen is a combination of flower pollen grains, nectar, enzymes, honey, wax, and bee secretions. Grazing honey bees collect pollen grains from flowers and transport it to the beehive, where it is collected and used as food material for the entire colony. Honey bees are natural pollinators, taking pollen from plant to plant as they go about their day. At the same time, this is immensely beneficial to the plants as pollinators, it's also a crucial part of bee colony's productivity and success.

INTRODUCTION

Bee pollen: Bee pollen in its usual form comes as small, crispy pellets. Recently bee pollen has gained a lot of attraction as it is loaded with many useful nutrients, amino acids, vitamins, lipids, and over 250 active ingredients.

Why do bees need pollen? Nectar is the primary ingredient of sugar and energy, and pollen grains are the primary source of protein for the honey bees. Protein is vital for the success of the entire beehive. It is the primary source in bee bread, a mixture produced by nurse bees to feed the larvae. Therefore, pollen plays a crucial role in successfully raising new honey bees. Like bees need pollen, flowers also rely on honey bees and other pollinators to spread their pollen to other flowers.

Pollen for pollination: Honey bees are polylactic pollinators, visiting various flower types and colours when collecting honey and pollens. As a bee travels from one flower to another, the fur on its body picks up pollen, travels along with the bee and brushes off on the next flower, thus allowing the plant to pollinate.

Pollen for hive collection: The process starts as much as honey bee flies between flowers and pollen sticks to the hairs on its body. Honey bee uses its legs to brush the pollen towards its hind legs, where stiff hairs called corbiculate or pollen baskets, collect and hold the pollen. The bee moistens the hairs on their front legs and brushes the pollen to their back legs. The sticky mass of pollen that was designed is compacted into the pollen baskets.

How do honey bees transport pollen? Different bees have diverse ways of carrying pollen back to their hive. Honeybees have structures called corbiculae to collect and transport pollen. Also named pollen baskets, these structures can be found on the back legs of worker bees. When these pollen baskets are filled, the bee marks its way back to the hive to stock the pollen for larvae to eat later, then leaves the beehive again for another trip. When they are vacant, the pollen baskets are unseen. It is only visible when they are occupied with pollen grains. They become so noticeable that the necked eyes can see them. Once the baskets are complete, the forager bees return to the hive and drop off the load.

Health Benefits of Bee Pollen

1. **Bee pollen as a nutritional Supplement:** Bee pollen, it naturally contains more than 250 biologically active substances including proteins, carbohydrates, lipids, fatty acids, vitamins, mineral, antioxidants and enzymes. Bee pollen is now available as capsules and a single granule contains 40 per cent carbohydrates, 35 per cent protein, 4-10 per cent water, 5 per cent fat and 5-15 per cent of other substances such as vitamins, minerals, antibiotics and antioxidants. However, the nutritional content pollen depends on the plant source and season collected. Pollens collected from pine plants contain approximately 7 per cent protein, whereas date palm pollen constitute 35 per cent protein.

In addition, bee pollen harvested during spring time has a significantly different amino acid composition than pollen collected during summer.

2. **Bee pollen contains high amount of antioxidant to fight against diseases:** Bee pollen is loaded with a wide variety of antioxidants such as flavonoids, carotenoids, quercetin, kaempferol and glutathione. Antioxidants are naturally occurring substances' that exist in plant-based foods, usually those that are red or dark in colour. Antioxidants protect the body against potentially harmful molecules called free radicals. Damage caused by free radicals is related to chronic diseases such as cancer and type-2 diabetes. Studies with animals and mammals have shown that bee pollen antioxidants can reduce chronic inflammation, eliminate harmful bacteria, fit infections and combat the growth and spread of tumours. However, antioxidant content of bee pollen also depends on its plant source.

Body of honey bee filled with pollen

Pollen collected in the pollen basket

Bee Pollen capsule

3. **Bee pollen lowers the risk of heart diseases (blood lipids and cholesterol):** Both, high blood lipids and high cholesterol are linked to an increased risk of heart disease. Interestingly, bee pollen may lower these risk factors. Research with animals has shown that bee pollen extracts can lower blood cholesterol levels, especially bad LDL cholesterol. For those with near-sightedness caused by closed arteries, bee pollen supplements lowered blood cholesterol levels, which increased their field of vision. Additionally, antioxidants in bee pollen may protect lipids from oxidizing. When lipids oxidize, they can clump together, restricting blood vessels, raising the risk of heart diseases.
4. **Bee pollen boost liver function: T**he liver is a vital organ that breaks down and removes toxins from the blood. Research with animals has found that bee pollen may enhance its detoxifying abilities. Bee pollen boosted the livers antioxidant defence and removed more water products such as malondialdehyde and urea, from the blood. Other research findings in animals showed that bee pollen antioxidants protect the liver in opposition to damage from several toxic substances, including drug overdoses and promotes liver healing as well. However, research on human beings on liver function is yet to be explored.
5. **Bee pollen includes anti-inflammatory characteristics:** Bee pollen packs several compounds that can reduce inflammation and swelling, including the antioxidant quercetin, which lowers the production of inflammatory omega 6 fatty acids such as arachidonic acid. Bee pollen has proven properties against inflammation and swelling. Bee pollen has reported to reduce swelling of rat's paws by 75 per cent. Indeed, its anti-inflammatory effects have been compared to several nonsteroidal anti-inflammatory drugs such as phenyl butazone, indomethacin, analgin and naproxen.
6. **Bee pollen avoid illness by boosting immunity:** Bee pollen may boost the immune system to avoid illnesses. A research states that bee pollen is able to reduce the severity and onset of allergies. In another research bee pollen is able to reduce the severity and onset of allergies. In another research, bee pollen was sown significantly reduce the activation of mast cells. Mast cells if activated release chemicals' that trier an allergic reaction. Bee pollen extract was found to kill potentially harmful bacteria such as *E.coli*, *Salmonella*, *Pseudomonas aeruginosa* and have confirmed that bee pollen as strong antimicrobial properties.

7. **Bee pollen as wound healing property and prevent infections:** Bee pollen as anti-inflammatory and antioxidant properties, which aid the body in wound healing. Research done with animals showed that bee pollen suspension was similarly successful at treating burn wounds as silver sulfadiazine, an old standard in burn treatment. Another research with animals revealed that applying a balm containing bee pollen onto a burn significantly accelerated healing over standard medicines. Bee pollens antimicrobial properties may also prevent infections, a major risk factor that can compromise the healing process for scrapes, cuts, abrasions and burns.
8. **Bee pollen contains anti-cancer properties:** Bee pollen may have applications for treating a preventing cancer, which occur when cells proliferate abnormally. Several researches suggest that bee pollen extracts to inhibit tumour growth and stimulate apoptosis, the programmed death cells in prostrate, colon and leukemic cancers. Bee pollen from (*Cistus incanus* L.) and white yellow (*Salix alba* L.) may have anti-estrogen properties, which could lower the risk of breast, prostate and uterine cancers. However, more research is required in this area. Bee pollen from citrus (*Cistus incanus L.*) and white willow (*Salix alba L.*) may have anti-estrogen properties, which could lower the risk of breast, prostate and uterine cancers. However, more findings are required in this area.
9. **Bee pollen improves nutrient utilization, metabolism and longevity:** Bee pollen may improve utilization of nutrients by the body. Theiron-deficient rat's absorbed 66 per cent more iron when pollen was added to their diet, which is due to the fact that pollen contains Vitamin C and bio flavonoids, which boost iron absorption. Additionally, healthy rats fed pollen, engrossed more calcium and phosphorus from their diet. Pollen contains-quality proteins and amino acids that may aid such absorption. Other animal studies have shown that bee pollen may improve muscle growth, speed up the metabolism and promote longevity. Though research with animals' shows that bee pollen may improve the absorption and use of nutrients like iron, calcium and phosphorus and it may also speed up metabolism and promote longevity, it is not proved in human being through research, which requires more exploration.
10. **Bee pollen as safe nutritional diet:** Bee pollen is available in granule or supplements form and is safe for most people. It can be purchased from health stores or from local beekeepers. The granules can be added with the normal food and consumed. Bee pollen supplements are generally safe to consume.

CONCLUSION

Bee pollen appears to be safe dietary supplement with health benefits, yet most of the science has been experimented on animal and cells, not human beings. Bee pollen should be purchased from reputable sources, while tainted bee pollen that contains potentially dangerous ingredients are reported to cause serious effects including increased heart rate, cardiac arrest and even death. Therefore, it is advisable to consult a physician before consuming bee pollen capsules. If experienced itching, swelling, lit-headedness and trouble beating, it is advised to discontinue the supplement immediately. Bee pollen may also interact negatively with blood thinners such as warfarin; therefore, people consuming blood thinners should avoid it. Experts also recommend that pregnant woman avoid taking bee pollen, as it may interfere with pregnancy.

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