BEEGHEE

The Bee Bread Science Guide

What the hive makes, what the research says, and how to make it part of your day.



WELCOME TO THE HIVE

A NOTE BEFORE YOU START

Bees were storing pollen in wax cells long before anyone was around to wonder about it. What they make there, bee bread, is one of the most remarkable foods in nature and one of the least known.

This guide gathers what we have learned writing the Beeghee Learn library: how the bees make bee bread, what is inside it, what the research says so far, and how to enjoy it every day.

We have kept it honest. Where the science is strong, we say so. Where it is still early, we say that too. Bee bread doesn't need exaggeration to be remarkable, and you deserve to know which is which.

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Inside

1 Five hive foods, five different jobs

2 How bees make bee bread

3 What's inside the jar

4 Bee bread and your gut

5 Honey, the hive's bacteria and a settled stomach

6 GABA and the gut–brain conversation

7 Bee bread and Manuka honey: a seed and a shield

8 How to eat it

· Sources

CHAPTER 1

Five hive foods, five different jobs

"Bee products" get lumped together, but each one has its own chemistry and its own work to do in the hive.

Honey

Nectar the bees concentrate into a dense store of energy. Its low water content and natural acidity keep it stable for years.

Bee pollen

Pollen pellets carried home on a forager's hind legs. Rich in protein, and wrapped in one of nature's toughest materials, the pollen wall.

Propolis

Resin the bees gather from tree buds to seal and protect the hive. Valued for its protective compounds, used in small amounts.

Royal jelly

A secretion from the glands of young nurse bees, fed to every larva for its first days and to future queens throughout.

Bee bread (perga)

Pollen packed into wax cells with nectar or honey and the bees' own secretions, then sealed and stored as the colony's protein food. This is what Beeghee is: bee bread from Veracruz, México, jarred with honey.

Diet decides who you become

In the hive, food shapes destiny. Larvae raised on royal jelly alone become queens. Worker larvae get royal jelly for their first three days, then a mix that includes honey and bee bread, and compounds from that pollen-rich food help steer them toward becoming workers. (Mao, Schuler & Berenbaum 2015)

CHAPTER 2

How bees make bee bread

It starts on a flower and ends in a sealed wax cell, the colony's larder for the months ahead.

1. **In the field.** A forager moistens the pollen she gathers with nectar and her own secretions so it packs into pellets on her hind legs.
2. **Into the comb.** Back at the hive, house bees press the pollen firmly into wax cells, working out the air, and often finish the cell with a layer of honey.
3. **The hive's own bacteria.** Honeybees carry a community of lactic acid bacteria in their honey crop, led by *Apilactobacillus kunkeei*. It travels into the stored pollen with the nectar and honey. This partnership between bees and their bacteria is ancient: scientists estimate it at more than 80 million years. (Vásquez & Olofsson 2009; Vásquez et al. 2012)
4. **Acidified and preserved.** Within days the stored pollen turns noticeably acidic. That acidity, together with honey and the bees' secretions, keeps the colony's protein food stable in the warmth of the hive.

What "hive-fermented" means

You will see bee bread described as fermented, and scientists are still refining the word. Lactic acid bacteria from the bees are clearly present, and the stored pollen acidifies quickly. Research from the USDA found relatively few microbes compared with the pollen itself, pollen grains that stay intact, and bees that prefer to eat their stores fresh. (Anderson et al. 2014; Carroll et al. 2017)

The clearest description is this: bee bread is pollen that the bees and their lactic acid bacteria have moistened, packed, acidified and preserved. That is what we mean by hive-fermented, and it is why we call it the Fifth Ferment™: a preservation craft the bees had mastered long before we learned to make cheese, wine or bread.

Where Beeghee comes in

Beeghee is bee bread from beekeepers in Veracruz, México, jarred with honey in the state the bees left it in. It is never heat-treated, never dehydrated and never put in a capsule.

CHAPTER 3

What's inside the jar

Bee bread is the hive's protein food, and like any whole food, what's inside reflects where it came from.

Protein and amino acids

Bee bread feeds the colony's young, so it carries the full set of amino acids bees need. Its exact profile shifts with the flowers the bees visited.

Plant polyphenols

Pollen brings flavonoids such as quercetin and kaempferol, the same family of compounds found in colourful fruits and vegetables.

Vitamins and minerals

B vitamins and trace minerals come along with the pollen, in the form a whole food provides them.

The hive's microbes and enzymes

Because Beeghee is never heated or dried, it carries what the hive put there rather than a stripped-down extract.

Every harvest tastes of its place

A study of bee bread from 26 English hives found pollen from 89 plant genera, with 6 to 35 plant types in each sample, and showed that the mix of flowers changed the protein and amino-acid content. (Donkersley et al. 2017) We call that signature a florageprint™: the particular bloom of a particular season, captured in the jar. It is why our summer harvest, Tangy Original, tastes bright and sharp.

CHAPTER 4

Bee bread and your gut

Your gut is an ecosystem, and the most exciting research of the last decade is about feeding that ecosystem well.

Fermented foods and a more diverse gut

In a 2021 Stanford study, healthy adults who ate more fermented foods for ten weeks saw their gut microbiome grow more diverse and their markers of inflammation fall. A comparison group eating more fibre did not show the same rise in diversity. (Wastyk et al. 2021)

That study looked at fermented foods such as yoghurt, kefir, kimchi and kombucha, not bee bread specifically. It points to the value of the whole family of living, traditional foods that bee bread belongs to.

The hive's bacteria

The lactic acid bacteria in bee bread come from the bees themselves. Inside the colony they are protective: researchers found this community of bacteria helps honeybees fend off harmful microbes. (Vásquez et al. 2012)

Where the research stands

Most research on bee bread so far comes from the lab and from animals, and human studies are only beginning. We find the direction of that research encouraging, and we will keep sharing what it finds on the Learn page at beeghee.co.

CHAPTER 5

Honey, the hive's bacteria and a settled stomach

Reflux is one of the most common digestive complaints there is, and two things bee bread contains, honey and lactic acid bacteria, have been studied for it.

Honey

In a small 2024 trial, 30 people with reflux took Manuka honey or a placebo for four weeks. The honey group reported more improvement in their symptoms, and the researchers also examined the results by endoscopy. (Gośliński et al. 2024) Honey's thick texture is one reason it is thought to soothe.

Probiotic bacteria

A 2020 systematic review gathered 13 studies of probiotics and upper-digestive symptoms. In 11 of the 14 comparisons it included, people taking probiotics saw benefits, including less regurgitation, less indigestion and fewer other upper-digestive complaints. (Cheng & Ouwehand 2020)

Putting it together

Bee bread brings honey, pollen and the hive's lactic acid bacteria together in one food. That makes it a gentle, natural companion for your digestion rather than a treatment, and it is not a replacement for anything your doctor has prescribed.

If you would like to try it this way, a teaspoon before a meal is an easy place to start.

CHAPTER 6

GABA and the gut–brain conversation

Your gut and your brain are in constant conversation, and some of the messengers they use are made by bacteria.

GABA (gamma-aminobutyric acid) is the nervous system's main calming messenger. Certain lactic acid bacteria can produce it, which is one reason scientists are so interested in the gut–brain connection.

A hive bacterium that makes GABA

When researchers tested 24 strains of lactic acid bacteria isolated from honeybees, one strain, *Lactobacillus plantarum* Taj-Apis362, was the strongest GABA producer of them all. (Tajabadi et al. 2015)

Bacteria, GABA and behaviour

In a landmark mouse study, feeding a *Lactobacillus* strain changed GABA receptor activity in the brain and eased anxiety-like behaviour, and the effect travelled through the vagus nerve, the main line between gut and brain. (Bravo et al. 2011)

> This is early, fascinating science about how gut bacteria talk to the brain, not a promise about any food. We share it because it shows how much the tiny inhabitants of a living food can matter, and why we keep bee bread the way the bees made it.

CHAPTER 7

Bee bread and Manuka honey: a seed and a shield

Both come from bees and both are treasured. They simply do different work.

Manuka honey's famous antibacterial strength comes mainly from methylglyoxal (MGO), the compound behind the MGO rating on the jar. (Mavric et al. 2008) Medical-grade Manuka honey has been used in wound dressings for years.

	Manuka honey	Beeghee bee bread
Made from	Nectar of the manuka bush	Pollen, packed and preserved by bees with honey
Its strength	Antibacterial, a protective shield	A living whole food, a seed for your inner ecosystem
Best known for	Sore throats, and wound care in medical grades	Daily nourishment: protein, polyphenols and the hive's own bacteria
Taste	Thick, sweet, intensely floral	Creamy, tangy and bright
How to use it	A spoonful when you need it	A spoonful every day

Your pantry has room for both. Knowing the difference means you can use each for what it does best.

CHAPTER 8

How to eat it

Bee bread is a food first. The best way to enjoy it is to make it an easy, daily habit.

A spoonful a day
One serving a day. A 255 g jar holds about 30.

Straight from the jar
The simplest way, and a favourite, first thing in the morning.

On bread or toast
Buttery enough to spread, beautiful on sourdough.

Stirred through
Yoghurt, oats or a smoothie. Add it once warm dishes have cooled a little, to keep it as the bees made it.

Keeping it

Keep the lid closed and the jar in a cool, dry cupboard.

Good to know

- If you have an allergy to bee stings, pollen or bee products, talk to your doctor before trying bee bread.
- If you are pregnant, nursing, taking medication or managing a health condition, check with your healthcare provider before adding new foods to your routine.
- Beeghee contains honey, so it is not suitable for infants under 12 months.

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SOURCES

The research behind this guide

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Read more, with new articles as the research grows: **beeghee.co/learn**

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