



TEDDY KIDS EXPLORER GUIDE • FILE 07

THE HONEY FILES

Honey vs Sugar – the sweet truth, checked by science

Ages 8+

Real research inside

0% baby stuff

01 What's actually in the jar?

Grab any jar of honey and look closely. It's **82% sugar**, about **16% water** – and only **1-2% of anything else**: fruit acids, a sprinkle of minerals, plant pigments called **polyphenols**, and bee-made enzymes. That tiny fraction is why honey isn't *exactly* sugar syrup... but the sugar is absolutely the boss of the jar.

The sugar isn't table sugar, though. Bees add an enzyme (**invertase**) that snips sucrose into its two halves: **fructose (~38%)** and **glucose (~31%)**, floating free. Table sugar is the same two molecules, still handcuffed together. Your gut has the key to those handcuffs – it cuts every sucrose molecule apart during digestion. So the end payload is identical.

Why it matters: free fructose tastes sweeter than table sugar and glucose tastes less sweet – honey lands ~1.3× sweeter per spoon. And glucose is the crystal-maker: it doesn't dissolve well, so glucose-rich honey (rapeseed) turns grainy in weeks while fructose-rich honey (acacia) stays runny for years.

02 The duel: honey vs sugar in your body

Honey

- 82 g sugar per 100 g, fructose+glucose mix
- Glycemic index 32-87 (depends on the flowers!)
- 1-2% acids, minerals, polyphenols, enzymes
- Never spoils – water activity too low for microbes

VS

Table sugar

- 100 g sugar per 100 g, pure sucrose
- Glycemic index ~65
- Nothing else – it's one molecule, repeated
- Lasts forever too, purely because it's dry

MYTH BUSTED

"Your body treats honey differently." In the fairest test ever run, 55 adults spent 2 weeks each on honey, sugar and corn syrup (same calories). Result: blood sugar, insulin, cholesterol, weight, blood pressure – **identical**. All three even raised triglycerides the same way. From your metabolism's view, honey mostly *is* sugar.

The dose rule: under ~1 tablespoon a day, honey vs sugar differences are tiny. Past ~20 g/day, studies show rising blood sugar, blood pressure and inflammation – honey or not. That's why WHO counts honey as **free sugar**, same limit as candy: under 10% of your daily energy.

Nice jar. Shame it's 82% of the same thing that's in the sugar bowl. – Prof. Buzz

03 The 1% club: the good stuff – does it survive?

The trace fraction is genuinely special: honey beats a sugar copy in antioxidant tests and protects blood lipids from damage in lab dishes. But how much is there? A tablespoon of honey delivers about **1-10 mg of polyphenols**. Studies that show health effects from polyphenols use **200-730 mg** – fifty to five hundred times more. You'd need to eat a whole jar.

MYTH BUSTED

"Stomach acid destroys everything in honey." Nope – the opposite. Plant polyphenols are *stable in acid*; they only break down later, in the alkaline intestine. In human trials, antioxidant levels in blood rose (+7%) after people ate buckwheat honey, and lab stomach-simulations kept 78-112% of them intact. The only things acid destroys are the **enzymes** – and that's fine, because their germ-fighting job happens on wounds and in your throat, not in your belly.

So: the good stuff survives you. There's just very little of it – at normal spoon-sized doses, nobody has proven it changes your health. Honest answer: **evidence gap**, not proof either way.

04 Honey the medicine: 5 secret weapons

Where honey is unarguably awesome is **on you, not in you**. It fights germs with five weapons at once – and bacteria have never been seen evolving resistance to honey:

1 • The Dry Spell

So little water that bacteria shrivel by osmosis. Honey excavated from Egyptian tombs was still safe to eat.

2 • Acid Rain

pH 3.2-4.5 – too sour for *E. coli*, *Salmonella* and *Pseudomonas* to grow in.

3 • Peroxide Drip

An enzyme makes slow-release hydrogen peroxide when honey is diluted – a gentle, hours-long germ assault.

4 • MGO (mānuka only)

Methylglyoxal: up to 828 mg/kg in mānuka vs ~5 in normal honey. The heavy artillery.

5 • Bee Defensin-1

An antibacterial protein from the bee itself – science only discovered it was essential in 2010.

✓ **Proven:** partial-thickness burns heal ~4.7 days faster with honey dressings (Cochrane, 26 trials, 3,011 patients). Kids' night cough: works about as well as pharmacy cough syrup (Cochrane, 899 children).

~ **Promising:** diabetic foot wounds, mouth rinse against plaque – positive trials, but smaller and weaker.

✗ **Busted:** chronic leg ulcers – the biggest honey trial ever (368 patients) found zero benefit. And it's a slow germ-fighter, not a contact disinfectant.

Every ancient culture used honey on wounds. They were right – just not about why, and not about eating it. – Prof. Buzz

05 Mānuka: the expensive legend

Mānuka honey from New Zealand really is special: its flowers give honey a chemical (**DHA**) that turns into germ-killer **MGO** during storage – up to 828 mg/kg, over 100× normal honey. In lab dishes it beats MRSA and blasts through bacterial biofilms. Real chemistry. Real weapons.

MYTH BUSTED

"Eat mānuka for your stomach." In a petri dish it kills ulcer bacteria (*H. pylori*) beautifully. In the only human trial, **all 12 patients stayed infected**. Swallowed MGO mostly reacts with your food – only 0.2% reaches your blood. There are zero human trials for gut health. The premium price buys a topical medicine, not a superfood.

Buyer beware: New Zealand makes ~1,700 tonnes of mānuka a year – but ~10,000 tonnes are sold worldwide as "mānuka". Regulators in the UK have banned mānuka health ads, and one big exporter was fined for faking it. Cheap "mānuka" is a label, not a promise.

06 The one hard rule

⚠ **NEVER** honey for babies under 12 months.

Honey can carry dormant botulism spores. An adult's gut ignores them; a baby's doesn't. About 130 US babies a year get infant botulism – since doctors started warning parents, honey-linked cases dropped by ~80%. No honey in any form: not in tea, not in baked goods. After the first birthday, the rule ends forever.

🧠 **Explorer quiz – check yourself**

1. Your body digests table sugar into which two sugars? (glucose + fructose – the same two honey delivers ready-made)
2. True or false: honey never spoils. (True – too little water for microbes)
3. Which honey weapon only mānuka has lots of? (MGO – methylglyoxal)
4. Why do doctors say no honey before age 1? (dormant botulism spores a baby's gut can't fight)
5. Does eating mānuka cure stomach infections? (No – killed 0 of 12 in the only human trial)

07 Word bank

Sucrose – table sugar; one glucose + one fructose handcuffed together.

Glycemic index (GI) – how fast a food raises blood sugar.

Cochrane review – the gold standard: scientists pooling all the trials on one question.

Polyphenols – plant pigments that act as antioxidants; honey has 5–50 mg per 100 g.

MGO – methylglyoxal, mānuka's main germ-killer.

Free sugar – WHO's category for added sugars + honey + syrups + juice sugars.