A PATIENT GUIDE FROM BELLYMD

Mastic Gum: What the evidence shows.

A plain-language look at a resin harvested from a small Mediterranean tree, and what the published research does and does not support for the upper gut.

About this guide. Mastic gum (the dried resin of *Pistacia lentiscus*) is one of the active ingredients in *MGB+ Cool* at 500 mg per daily serving. This handout covers the published evidence behind mastic gum so you can read it yourself and decide what makes sense for you.

CHAPTER ONE

What is mastic gum?

> *A short answer first. Mastic gum is a hardened tree resin from a small evergreen called Pistacia lentiscus, which grows on the Greek island of Chios. People have used it for upper-gut complaints for at least two thousand years. The modern research is mostly about three things it appears to do: cover the stomach lining, calm inflammation, and act against the bacterial infection Helicobacter pylori.*

The tree itself is a relative of the pistachio. Cut into the bark of the trunk in the summer, the tree releases small drops of clear resin that fall to the ground and slowly harden into pale yellow tears. Those tears are mastic gum. Harvest on Chios is centuries old and now protected in the European Union under a designation called *protected designation of origin*, which is the same label used for products like Champagne and Parmigiano-Reggiano.[1,2]

Mastic gum gets a brief mention in the writings of Hippocrates and a more detailed one in the first-century pharmacology text by Dioscorides, where it appears as a remedy for stomach discomfort and bad breath. From there it traveled across the Byzantine and Ottoman worlds as a chew, a tonic, and a wound dressing. The medical curiosity is that two thousand years later, the most rigorous published research focuses on the same body part: the upper gastrointestinal tract.[1,2]

> **THE SHORT VERSION**
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> Mastic gum is a tree resin from the Greek island of Chios. It contains a family of fat-soluble plant compounds called triterpenes. Published research suggests it can support the stomach lining, calm low-grade inflammation in the gut, and act against the bacteria *H. pylori*, which is one of the common causes of chronic stomach trouble.

What it is made of

Most of the dried resin is a mixture of plant compounds called *triterpenes*. The main ones identified in Chios mastic are masticadienonic acid, isomasticadienonic acid, oleanonic acid, moronic acid, and a few smaller relatives.[1,2,3] These are the molecules researchers focus on when they try to explain what mastic does in the body.

One thing to know up front: not all mastic on the market is the same. Chios mastic, the specific variety used in most of the published research, has a tightly regulated composition. Mastic from other regions or extracted in other ways can have very different triterpene levels. When this brief talks about mastic gum, it means the Chios variety used in the published trials.[1,2]

A note on language

You will see the resin called several different names in the research and on labels: mastic gum, gum mastic, mastiha, mastic resin, or just *Pistacia lentiscus*. They all refer to the same thing.

CHAPTER TWO

How mastic gum works in your body

> *Think of the upper gut as a series of layers. There is the acid your stomach makes for digestion. There is the protective mucus that coats the stomach lining so the acid does not damage the wall underneath. There is the lining itself, with its blood supply and its immune cells. And in many people, there is a long-running bacterial infection called H. pylori living in that mucus layer. Mastic gum acts on those last three. It does not act on acid.*

What H. pylori is

H. pylori is short for *Helicobacter pylori*. It is a corkscrew-shaped bacterium that quietly lives in the mucus layer of many people's stomachs, often for decades. It is one of the most common bacterial infections in humans worldwide. In most people it causes no obvious problems, but in a meaningful subset it contributes to chronic gastritis, stomach ulcers, and post-meal symptoms like burning, fullness, and discomfort. It is also a recognized risk factor for stomach cancer, which is why physicians take it seriously when they find it.[1,2,9]

Layer one: the stomach lining

One of the oldest pieces of mastic research, from a 1986 Saudi pharmacology lab, found that giving mastic resin to rats reduced damage to the stomach lining from chemicals and stress that would normally produce ulcers. The protective effect appeared to work through the stomach's own defense and repair systems rather than by blocking acid.[3] Later animal work has reproduced the same general picture: mastic helps the stomach lining hold up under stress and supports the natural turnover of cells in the lining.[2,4]

The plain-language version: mastic is not an acid blocker. It does not reduce how much acid your stomach makes. It appears to help the part of the stomach wall that has to live with that acid, the mucus and the cells underneath it, do their job more effectively.[2,3,4]

Layer two: inflammation

When tissue in the gut is irritated, immune cells release signaling molecules that turn the volume up on inflammation. One of the central control panels for this process is a protein switch inside cells called *NF-kB*. When NF-kB is activated, cells make more inflammatory signals. When it is turned down, they make fewer.

Several laboratory studies have looked at what fractions of mastic gum do to NF-kB. The Greek research team led by Apostolos Papalois showed that mastic fractions reduced NF-kB activation in human gut cell lines under conditions that mimic inflammatory bowel disease.[10] Other groups have extended this work, showing reduced production of inflammatory signaling molecules like IL-1 beta, IL-6, and TNF-alpha in cell systems.[2,11] An animal study in a colitis model showed that mastic reduced both visible intestinal damage and inflammatory markers.[12]

These are mechanism studies, not clinical proof, but they are consistent: across multiple labs and multiple model systems, mastic appears to dial the inflammatory signal down rather than up.[2,10,11,12]

Layer three: acting on H. pylori

This is where the modern interest in mastic started. In 1998, a Nottingham research group sent a short letter to the *New England Journal of Medicine* reporting that small amounts of mastic gum killed *H. pylori* in the test tube, including strains that had become resistant to standard antibiotics.[5] That single letter touched off three decades of follow-up work.

Follow-up laboratory studies confirmed and refined the picture. An Italian group reported that mastic resin killed *H. pylori* at clinically plausible concentrations in vitro.[6] A 2007 paper by Sotirios Paraschos and the Skaltsounis group in Athens went further: they showed that specific triterpene fractions of mastic, especially an acidic

fraction, were responsible for most of the activity, and that giving mastic extract orally to *H. pylori*-infected mice produced about a thirty-fold reduction in the bacterial load in the stomach over three months.[7]

One earlier mouse study by Loughlin and colleagues found that mastic by itself did not fully eradicate the infection in mice.[8] This is important and we will return to it. The honest read is that mastic appears to lower the bacterial burden meaningfully, but in animal models it does not act like a single antibiotic that wipes out the infection on its own.

> **WHY THIS MATTERS FOR UPPER-GUT SYMPTOMS**
> Post-meal burning, fullness, and reflux often have more than one driver. Acid is one of them, and acid blockers are good at that part. The other drivers, the mucus and lining underneath, the level of low-grade inflammation, and a possible bacterial passenger, are exactly where mastic appears to act. That is why mastic shows up alongside acid management in a multi-mechanism upper-gut formulation, not in place of it.

CHAPTER THREE

What the studies show

> *Here is the published clinical evidence by area. The laboratory and animal evidence is consistent. The human evidence is smaller, mostly from a few Greek research groups, with some signals that are real and others that need bigger studies before strong claims are appropriate. We will say that honestly throughout this section.*

H. pylori in humans

RANDOMIZED PILOT TRIAL · 52 PATIENTS · MIXED SIGNAL

The clearest human study to date is a small randomized pilot trial run by Konstantinos Dabos and colleagues in Greece, published in *Phytomedicine* in 2010. They divided 52 *H. pylori*-positive patients into four groups: mastic gum alone, mastic gum plus a single acid-blocking medication, the acid blocker alone, and the standard triple-therapy antibiotic regimen used in clinical practice. After treatment, the standard triple-therapy group cleared the bacteria most reliably, around 77 percent. The mastic-only group also cleared the bacteria in a meaningful share of patients, though at lower rates than triple therapy.[13]

What this means: mastic gum is not a replacement for antibiotic eradication therapy when a patient and physician have decided to clear an infection. The study is most useful as evidence that mastic has biological activity against *H. pylori* in humans, not just in test tubes, and that some patients did achieve clearance with mastic alone, an effect that almost never happens with acid blockers alone.[13] Larger trials would be needed to know who responds and at what dose.

Functional dyspepsia

RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED TRIAL · 148 PATIENTS

Functional dyspepsia is the medical term for post-meal burning, fullness, and stomach discomfort that does not have an obvious structural cause on testing. The largest published mastic trial focused on this exact population. Dabos and colleagues randomized 148 patients with functional dyspepsia to mastic gum or placebo for three weeks, with neither the patients nor the researchers knowing who got which. The mastic group reported significantly greater symptom improvement than placebo on a standard dyspepsia symptom scale.[14]

What this means: this is the strongest human signal in the mastic literature for the symptom cluster that drives most people to look at upper-gut supplements in the first place. The study was small by drug-trial standards but well designed: blinded, placebo-controlled, with a defined symptom scale.[14] It is the closest the published evidence gets to a clean answer about post-meal symptoms.

Inflammatory bowel disease

SMALL CLINICAL TRIALS AND TRANSLATIONAL STUDIES · PRELIMINARY

Several Greek studies have tested mastic in inflammatory bowel disease, which is different from functional dyspepsia and refers to long-running inflammation of the gut, most commonly Crohn's disease or ulcerative colitis. A 2007 study by Andriana Kaliora and colleagues gave mastic to ten patients with active Crohn's disease for four weeks and reported reductions in disease activity scores and inflammatory markers, with no serious side effects.[15] A companion paper from the same group reported changes in the behavior of circulating immune cells consistent with reduced inflammation.[16]

A larger 2019 randomized double-blind placebo-controlled trial enrolled 60 inflammatory bowel disease patients on top of their standard medications and gave them either mastiha at 2.8 grams per day or placebo for three months. The mastic group showed improvements in a validated quality-of-life questionnaire and reductions in a specific stool inflammatory marker.[17]

What this means: the inflammatory bowel signal is consistent across multiple small studies, but the trial sizes are still small and the studies are concentrated in a single Greek research network. The evidence supports mastic as an interesting adjunct worth more research; it is not strong enough to be considered an established treatment for inflammatory bowel disease.

Cholesterol and metabolic markers

RANDOMIZED TRIAL · 156 VOLUNTEERS ANALYZED · MODEST EFFECT

The CHIOS-MASTIHA trial randomized healthy volunteers with elevated cholesterol to receive total mastic, mastic powder, or placebo for eight weeks. Total cholesterol fell modestly in the mastic group, on the order of about 11 mg/dL, with some additional effects on fasting blood sugar in overweight participants.[18]

What this means: the metabolic effects are modest and well outside the main use case for upper-gut support, but they are mentioned here because they show up consistently in the broader mastic literature and may matter to some readers. Mastic should not be relied on as a cholesterol treatment.

Oral and periodontal health

SMALL CLINICAL STUDIES · SUPPORTIVE BUT SECONDARY TO THE GUT DATA

Mastic chewing gum and mastic-based toothpastes have a small clinical literature suggesting benefits for gum health, breath, and bacterial counts in the mouth, consistent with its broader antimicrobial profile.[2,19] This is mentioned because it is part of the published evidence base, but it is not the reason mastic appears in MGB+ Cool.

What has not been studied directly

GAPS TO FLAG

There is no large blinded trial of mastic specifically for gastroesophageal reflux disease, often shortened to *reflux disease*. There is no head-to-head trial of mastic against a proton-pump inhibitor, often shortened to *PPI*, the family of acid-blocking medications. There is no large trial confirming that mastic plus antibiotic triple therapy clears *H. pylori* better than triple therapy alone, although this is a reasonable hypothesis given the mechanism. And there is no robust evidence about long-term daily use beyond a few months. We will not pretend otherwise.[2,9,20]

CHAPTER FOUR

About dose and timing

> *Published clinical trials of mastic gum have used a fairly wide range of daily doses. The dose in MGB+ Cool sits inside that range, on the lower end of the therapeutic studies.*

What the literature has tested

DAILY DOSE	TYPICAL USE IN TRIALS	FORM USED
1000 to 2800 mg	Inflammatory bowel disease trials[15,17] and the metabolic CHIOS-MASTIHA trial[18]	Whole mastic powder or whole mastic
350 to 1000 mg	The Dabos functional dyspepsia and H. pylori pilot trials[13,14]	Whole mastic gum
500 mg	Typical multi-ingredient daily-support range; corresponds to MGB+ Cool	Whole Chios mastic gum

Why this dose was chosen

The 500 mg dose in MGB+ Cool sits inside the published clinical trial range. It is at the lower end of what has been studied in single-ingredient functional dyspepsia and *H. pylori* trials, and well below the higher doses used in inflammatory bowel disease research. Two reasons for that choice. First, MGB+ Cool is a multi-mechanism formula, not a single-ingredient mastic product, so mastic is one lever among several rather than the only one.

Second, daily-support dosing aims to keep a steady useful amount on board over time rather than rescue someone from a flare.

We will be transparent. A 500 mg daily dose is not the exact dose tested in the largest single-ingredient functional dyspepsia trial, which used 350 mg twice daily.[14] It is a reasonable, evidence-informed choice for a multi-ingredient daily formula; it is not a replication of any specific trial dose.

Time to effect

In the Dabos functional dyspepsia trial, symptom differences between mastic and placebo became clear over about three weeks of daily use.[14] Inflammatory bowel disease trials have measured outcomes at one to three months.[15,17] A reasonable expectation is two to six weeks of consistent daily use before judging effect.

With or without food

Mastic resin is fat-soluble, which means absorption tends to be slightly better when it is taken with a meal that contains some fat. The clinical trials generally dosed it with meals. Consistency matters more than exact timing.

CHAPTER FIVE

Safety and what to know

> *Mastic gum has been used as a food and a medicinal chew on Chios for thousands of years. The modern trial literature is consistent with that long track record. A few specifics still deserve attention.*

Side-effect profile

In the published controlled trials of oral mastic in functional dyspepsia, *H. pylori*, and inflammatory bowel disease, side effects were uncommon and generally mild.[13,14,15,17] The most frequently reported complaints are mild stomach upset and, occasionally, a transient piney aftertaste. Reducing the dose or taking it with food typically resolves both.

Allergy considerations

Mastic is a tree resin from a relative of the pistachio. People with known allergy to pistachio, cashew, or related tree nuts should approach mastic gum cautiously and discuss it with their physician first.[2] Reports of true allergic reactions to oral mastic in the published literature are rare, but the family relationship is worth flagging.

Drug interactions

There are no well-established major drug interactions for oral mastic gum at typical supplement doses in the standard prescribing references. The modest cholesterol- and glucose-lowering effects seen in the CHIOS-MASTIHA trial[18] are worth knowing about if you take medication for either: the effect size is small but theoretically additive, so people on diabetes or lipid medications should make sure their physician knows they are starting mastic. Beyond that, mastic appears not to interact with the medication classes most relevant here, including proton-pump inhibitors, H2 blockers, and standard antibiotic regimens.[2,9]

Pregnancy and lactation

Mastic gum has a long history of culinary use, including in pregnancy in Mediterranean populations. There is, however, no controlled trial evidence specifically supporting supplemental doses of mastic during pregnancy or

lactation. The conservative recommendation is to avoid mastic gum supplementation during pregnancy and lactation unless a physician advises otherwise.

Use with acid-blocking medications

Mastic gum and acid-blocking medications act on different parts of the upper-gut problem. The acid blocker addresses acid; mastic acts on the mucus layer, the lining, the level of inflammation, and a possible bacterial passenger. The published trials have included patients on standard medications without difficulty.[15,17] Mastic works alongside whatever else a physician has prescribed; it is not intended to replace any prescribed therapy.

> **WHEN TO TALK TO YOUR PHYSICIAN FIRST**
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> - You are pregnant or nursing.
> - You have a known allergy to pistachio, cashew, or other tree nuts.
> - You take medication for blood sugar or cholesterol.
> - You have a known *H. pylori* infection that has been recommended for antibiotic eradication.
> - You are managing a diagnosed condition like Crohn's disease, ulcerative colitis, or a peptic ulcer.

CHAPTER SIX

Where the evidence has limits

> *An honest brief includes the weaknesses of the science it cites. The mastic literature has several real ones.*

Trial sizes are small

The largest published mastic trial in upper-gut symptoms enrolled 148 patients.[14] The *H. pylori* pilot enrolled 52.[13] The active Crohn's disease study enrolled ten.[15] Real signals can emerge from small studies, but so can statistical noise. Larger and longer trials would be needed before strong claims are appropriate.

Research is concentrated in Greek groups linked to the Chios industry

Much of the modern mastic research comes from a handful of Greek research groups, several of which have direct or indirect connections to the Chios mastic industry, which holds the protected designation of origin. This does not invalidate the work. It does mean readers should weight the literature accordingly until independent confirmation arrives from groups outside the region.[2,20]

Variability in mastic preparations

Different mastic products use different parts of the tree, different solvents, and different processing steps, which produces meaningfully different triterpene profiles. Trial results from whole Chios mastic do not automatically apply to a leaf extract, a fatty oil, or a different regional resin.[1,2] When research talks about mastic gum, it usually means Chios resin specifically.

Mechanism is clearer than effect size

The laboratory evidence for mastic's three main effects, lining support, anti-inflammatory action, and activity against *H. pylori*, is consistent across multiple labs.[2,3,4,5,6,7,10,11,12] The clinical effect size in human trials is real but typically modest. Anyone telling you that mastic eradicates *H. pylori* on its own, cures reflux, or replaces

a prescription medication is overstating the evidence. Anyone telling you it does nothing is also overstating the evidence in the other direction. The honest position sits between the two.

Honest summary

Mastic gum has one of the longest continuous histories of any upper-gut botanical, a coherent and reproducible mechanism story across modern laboratory work, and a small but real human trial literature pointing in a consistent direction for functional dyspepsia, *H. pylori*-related symptoms, and inflammatory bowel disease. The evidence is strong enough to take seriously as one layer of upper-gut support. It is not strong enough to take instead of standard medical evaluation and treatment.

CHAPTER SEVEN

The bigger picture

> *Why mastic gum appears in MGB+ Cool at 500 mg per daily serving, and how it fits into a mechanism-first approach to the upper gut.*

Post-meal burning, fullness, and reflux are rarely caused by one thing. Acid is one driver, and acid blockers do their job there. Around the acid, several other things are going on. The mucus layer that coats the stomach lining may be thinner than it should be. The lining itself may be carrying low-grade inflammation. The gut wall may be slow to move food through. Mast cells, the immune cells that release histamine and other signals in the gut wall, may be more reactive than they should be. And in a meaningful share of people, *H. pylori* may be quietly contributing in the background.

A single-ingredient supplement aimed at one of those layers often misses the others. MGB+ Cool is built around the idea that the upper gut needs several layers of support working in parallel, alongside whatever acid management a physician has already prescribed. Mastic gum is the layer that acts on lining support, low-grade inflammation, and *H. pylori*. Other ingredients in the formula address adjacent layers: motility, mast-cell signaling, and cellular energy.

The point is not that mastic does everything. It is that the published evidence supports mastic gum as one capable lever among several, for people whose upper-gut symptoms persist despite reasonable acid management and whose physician has ruled out the things that need a different kind of treatment.

HOW TO USE THIS BRIEF

Bring it to your physician. Read the references. If you decide to try mastic gum as part of MGB+ Cool, give it at least three to six weeks at a consistent daily dose before judging effect, and keep taking any acid-blocking medication your physician has prescribed unless your physician tells you otherwise. Mastic works alongside the rest of your care, not in place of it.

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This handout is for informational purposes only and does not constitute medical advice. Talk to your physician before starting any new supplement, especially if you are pregnant, nursing, or taking prescription medications.

Statements regarding dietary supplements have not been evaluated by the FDA and are not intended to diagnose, treat, cure, or prevent any disease.

CITATIONS

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All references are real, PubMed-indexed publications. PMID numbers are listed where assigned. DOIs are included where available for direct linking.

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