Tea Polyphenols: What the Evidence Really Says

From the teas.co.uk wiki

> **Tea polyphenols, in summary:** Catechins, theaflavins and thearubigins are real plant compounds with preliminary, modest research behind them. The "antioxidant superfood" framing over-claims, the doses in studies dwarf a normal cup, and tea is worth drinking for pleasure, not as medicine.

"Polyphenols" is the word behind most tea health claims. This sits in the evidence cluster beside is tea actually healthy.

Last reviewed by the teas.co.uk team in May 2026.

> ***Important:*** *general information, not medical advice. Most tea health research is observational, modest in effect, and not proof that tea treats or prevents disease. Do not change diet, medication or care on the basis of a headline; speak to a GP or pharmacist about your own circumstances.*

What they are

Polyphenols are plant compounds with multiple hydroxyl groups, and dry tea is roughly 15-30% polyphenol by weight, so they are a substantial part of the leaf and contribute much of its bitter, astringent character. The major families are catechins (predominant in green tea, the most-studied being EGCG), theaflavins and thearubigins (both formed during oxidation, characteristic of black tea and its red-brown colour). All true tea contains polyphenols; processing changes the profile rather than the total, which is why "more polyphenols" is not a simple scale.

At a glance

Aspect	Answer
Major categories	Catechins (green), theaflavins and thearubigins (black)
Key catechin	EGCG, the most studied, concentrated in green tea
Daily intake from tea	roughly 200-400mg for a typical UK drinker
Evidence status	preliminary, observational, modest, not definitive
The dose problem	research often uses extracts 10-100x a daily cup's worth

Aspect	Answer
Bioavailability	many absorbed poorly; gut bacteria do much of the work
Disease claims	no tea is proven to prevent or treat cancer or dementia

What the research actually shows

Regular tea drinking is associated with modest cardiovascular and metabolic benefits in large observational studies, but the effect is small, the causation is not clear, and the specific compound responsible is uncertain, the same modest picture the tea and health guide describes. Laboratory and animal work on catechins is more striking, but it does not translate cleanly to people drinking cups. Cancer, cognitive and anti-ageing claims are very preliminary and not actionable. The right register is "a sensible, possibly mildly beneficial habit", not "drink this to prevent disease".

The dose and bioavailability problem

Two issues quietly undermine the dramatic claims. First, dose: many positive studies use isolated extracts at 800-1500mg of catechins, the equivalent of 8-15 cups of strong green tea, and very high EGCG doses from supplements have even been linked to liver problems, so the research dose is often not achievable, or advisable, through drinking. Second, bioavailability: many polyphenols are absorbed poorly (often under 5% of EGCG reaches the bloodstream) and are rapidly metabolised, while gut bacteria transform the rest into other compounds that vary from person to person. Both facts point the same way: expect modest effects from tea drinking, not extract-dose effects.

The "antioxidant superfood" oversimplification

The popular framing runs: polyphenols are antioxidants, oxidative stress drives ageing and disease, therefore tea prevents both. The gap is that in-vitro antioxidant activity does not reliably translate to in-vivo effects, and large trials of antioxidant supplements (vitamin E, beta-carotene) have generally failed to show benefit and occasionally shown harm, the scepticism the tea myths debunked guide applies. Tea's genuine value, hydration, a mild lift, pleasure, replacing less healthy drinks, is broader than this single marketed claim. Processing also matters: oxidation converts catechins to theaflavins and thearubigins, so green and black differ in profile but both show research signals, and "green tea is healthiest" oversimplifies, the chemistry the oxidation guide sets out.

Common questions

What are tea polyphenols? Plant compounds, mainly catechins in green tea and theaflavins and thearubigins in black, that give much of tea's flavour and are studied for modest health effects.

Do they prevent disease? No tea is proven to prevent or treat cancer, dementia or ageing. The research shows modest associations, not cures.

Is green tea highest in polyphenols? All tea is rich in them; processing changes the profile, not the total. "Highest antioxidant" labelling is mostly marketing.

Should I take a polyphenol supplement? Be cautious: research doses far exceed a cup, and very high EGCG supplements have been linked to liver issues. Ask a professional.

Drink it for the cup, not the claim

Enjoy a fresh green tea, a matcha or a full-bodied black tea from the full tea shop. Tea is worth drinking for pleasure, and free UK delivery is over £35.

Browse the tea range

Reference noted

- PubMed: Green tea catechins and human health
- PubMed: Polyphenols and chronic disease prevention

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