

Guarana

Paullinia cupana — Amazonian seed, sold as powder, standardized extract and as an energy-drink ingredient

Guarana is caffeine with a botanical wrapper. Its seeds carry 3–5% caffeine by dry weight against 1–2% for coffee beans, and the trial literature tracks that caffeine dose closely. The practical issue is not efficacy but arithmetic: guarana is the most common way people consume caffeine without counting it.

SUMMARY TABLE

Attribute	Summary
Primary uses	Alertness and subjective energy; modest reaction-time improvement. Widely marketed for cognition, cancer-related fatigue, weight loss and athletic performance — none supported.
Evidence strength	Moderate for acute alertness, attributable to caffeine dose. Low for reaction time (2023 meta-analysis, $g=0.202$). Not supported for overall cognition, memory, fatigue, weight loss or endurance.
Effective dose	Trial range 37.5–1,000 mg/day (median 222 mg). Raw powder: ~30–50 mg caffeine per gram; 26% extracts: ~78 mg per 300 mg. Count against the FDA's 400 mg/day caffeine ceiling.
How to take	Single-ingredient product with caffeine mg stated numerically. 30–60 minutes before the desired effect. Separate from iron by ~2 hours (tannins bind iron).
Time to effect	Onset 30–60 minutes, peak ~1 hour, consistent with caffeine kinetics; a 4–6 hour half-life means avoid within 6–8 hours of bedtime.
Serious risks	At high doses: tachycardia, borderline prolonged QTc, ST changes, seizures. A 2019 analysis of energy-drink adverse events (2008–2015) found 38 deaths and 147 hospitalizations, with caffeine-plus-guarana products showing a higher hospitalization share.
Who should avoid it	Pregnancy/lactation; children/adolescents; arrhythmia, structural heart disease, uncontrolled hypertension or prolonged QT; anxiety/panic disorder; insomnia; MAOI users.
Quality markers	Caffeine mg per serving stated numerically; no proprietary blends; third-party certification (NSF Certified for Sport, Informed Sport, USP, BSCG); HPLC-verified certificate of analysis.

WHAT THE TRIALS SHOW

A 2023 Nutrients meta-analysis (8 trials, 328 participants) found overall cognition non-significant ($g=0.076$, $p=0.14$) and response time modestly improved ($g=0.202$, $p=0.005$), with a meta-regression showing essentially no dose-response relationship — an awkward finding for a compound whose effect is supposedly dose-dependent caffeine. A 2024 crossover trial found neither 500 mg guarana nor 100 mg caffeine influenced cognitive performance, and also found the tested guarana product delivered 130 mg of caffeine against a 100 mg label claim.

The cancer-related fatigue claim has moved from positive to null: a 2021 meta-analysis of three breast-cancer trials found guarana not superior to placebo, and ASCO states it should not be recommended for treatment-related fatigue.

THE STACKING PROBLEM

Caffeine arriving inside a botanical extract does not have to be broken out as a caffeine quantity on US labels, which makes guarana the standard way for a formulator to add uncounted caffeine. It is routinely co-formulated with yerba maté, green tea extract, kola nut and synephrine, each adding stimulant load; a Public Health Nutrition analysis of FDA/poison-center data (2008–2015) found six of 38 energy-drink deaths involved exposures at or below the supposedly safe 400 mg threshold.

BOTTOM LINE

If you want caffeine, coffee is cheaper, better characterized, and comes with a number you can count. If you do use guarana, find the caffeine milligrams, add them to everything else consumed that day, keep the total under 400 mg, and refuse any product that will not disclose the number. Do not stack it with other stimulants, and discount claims about accuracy, memory,

cancer fatigue or weight loss — guarana makes you feel more awake in proportion to the caffeine you just took, nothing more.

SOURCES

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3. "Guarana for cancer-related fatigue: systematic review and meta-analysis." *Support Care Cancer*, 2021.
4. "Caffeinated energy drinks: adverse event reports to the FDA and NPDS, 2008–2015." *Public Health Nutrition*, 2019.
5. US FDA. "Spilling the Beans: How Much Caffeine is Too Much?"

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