

Nootropics — The Evidence and an Honest Appraisal

What RCT meta-analyses show. What marketing does. What the law says.

The market for “smart drugs” grows at roughly 8 % a year; the evidence behind it is very unevenly distributed. This review keeps three strands strictly apart: **what meta-analyses actually show, which mechanisms are plausible and which are marketing, which regulatory and ethical aspects are real**. Effect sizes as standardised mean differences (SMD / Cohen's d). Focus: healthy adults without a clinical indication.

Robust evidence	Suggestive — small to moderate	Interpretive — weak	Speculative — no evidence
Caffeine0.27–0.28 · Kløve 2025 Caffeine + L-theanine (1:2)SMD 0.33 · Payne 2025 (COI) Modafinil under sleep deprivationqualitative · Repantis 2010 Reference: sleep deprivation < 48 hloss up to g 0.78	Methylphenidate (healthy)SMD 0.21 · Roberts 2020 Modafinil (rested)SMD 0.12 · clinically small Omega-3 (DHA/EPA)mainly at low baseline Creatine monohydrateSMD 0.31 · Xu 2024 Bacopa monnieriMD 0.49 · Feng 2026	L-theanine alone5 RCTs, 148 participants Ginkgo (healthy)MD 0.21 n.s. · Feng 2026 Rhodiola roseastress-specific Cholinergics (α-GPC)mechanism > clinic	PiracetamSMD n.s. · Gouhie 2024 Lion's mane1 RCT, n = 30, manufacturer Stack productscompound context missing

Recurring patterns (8, MITRE-style)

- marketing vs. SMD discrepancy
- deficiency correction sold as enhancement
- sleep compensation in disguise
- compound-context ignorance
- industry sponsorship
- acute test vs. life effect
- mechanism instead of evidence
- tradition instead of data

Law in Germany and Austria (2026)

OTC: caffeine, L-theanine, omega-3, creatine, Bacopa, Rhodiola, Ginkgo. **Prescription:** modafinil, piracetam, vinpocetine. **Narcotics law:** methylphenidate. **Not**

legally obtainable: noopept, phenylpiracetam,

tianeptine.

Bottom line: for anyone whose sleep, exercise and micronutrient status are in order and who wants acute alertness, caffeine in moderation (optionally with L-theanine) is the only substance with uncontested evidence. Every other expectation is either statistically too small to notice in daily life or legally problematic.

Main methodological findings: an SMD below 0.2 is rarely perceptible in daily life. Part of the stimulant effect is compensation for a sleep deficit, not a gain above baseline. Stimulants change the state acutely — they do not create competence. Compound context: effects are not additive, stack products are hard to evaluate. HARKing is endemic in nootropics research.

Companion dataset for the MYZEL engine v7: FORSCH-PROV0446_nootropika_v0.9_2026-10-06_myzel-seed.json · 23 claims · 11 cross-domain bridges · 7 definitions · 8 patterns. Importable into MYZEL v7: multi-API source validation (Crossref, OpenAlex, PubMed, arXiv), replication tracker, SHA-256 hash-lock pre-registration. Open science, open to checking.

SMD scale (Cohen 1988): d = 0.2 small · d = 0.5 medium · d = 0.8 large. SMD < 0.2 is usually not relevant in daily life.

AUTHOR Thomas Schüller · Syntagma Forschung, Vienna forschung@tschueller.com ORCID 0009-0003-9799-6747 independent · privately funded	METHOD Open-science-first · peer-reviewed sources (PubMed, Cochrane, Frontiers, Nature, ScienceDirect) GRADE where available · effect sizes instead of anecdote	LICENCE · VERSION CC BY 4.0 · v0.9 · 2026-10-06 · FORSCH-PROV0446 (prov.) Vollversion: FORSCH-PROV0446_nootropika_v0.9_2026-10-06_paper-en.pdf Not a treatment guide.
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