



DOSSIER · SUBSTANCE

Coffee Fruit Extract

The database contains works on coffee fruit extract, of which a small number are in humans. The **human data situation is still under development** and focuses on a few areas of application. The controlled studies examine above all **cognitive effects** and **safety**, while basic research dominates.

851

STUDIES IN
TOTAL

38

IN HUMANS

13

OF WHICH
CONTROLLED

44

IN ANIMALS

33

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-16

How to Read This Dossier

ESTABLISHED

measured in humans, with a comparison group

PLAUSIBLE

supported by mechanism, animal studies or observation

HYPOTHESIS

a likely connection that still needs to be tested

Coffee Fruit Extract at a Glance

ORIGIN:

Coffee fruit extract is obtained from the coffee cherry (*Coffea* spp.), particularly from by-products such as the pulp that arise during coffee production. This contains polyphenols, chlorogenic acids and proanthocyanidins, whose composition varies depending on variety, growing conditions and extraction method. The extract is not a standardised product and is often combined with other substances.

EVIDENCE BASE:

851 evaluated studies · 13 controlled human studies · 25 observational studies · 30 review articles · 44 animal studies · 26 cell culture studies

STRONGEST EVIDENCE:

- **Cognition** Controlled studies show acute improvements in working memory, reaction time and subjective “energetic arousal” after administration of combinations with coffee fruit extract (e.g. 100–440 mg). Significant effects on neurophysiological parameters (e.g. cerebral blood flow) were observed in these studies, but no consistent increases in BDNF or glutamate. The effect of the extract alone cannot be inferred from this.
- **Safety** Studies on the tolerability of coffee fruit by-products (e.g. coffee cherry cascara) suggest basic safety; systematic investigations into different dosages are still outstanding.
- **Metabolism:** A study with coffee cherry pulp juice concentrate (28 g/day over 12 weeks) showed significant changes in cholesterol and LDL levels in healthy participants, without adverse events. Glucose levels remained more stable than under placebo. The study provides an indication of possible metabolic effects, but clinical relevance remains outstanding.

LIMITATIONS:

- The controlled human studies (13) are heterogeneous in dose, extract form and target parameters. Some of these studies examine acute effects; long-term effects are still outstanding.
- Methodological quality varies widely: some studies are randomised and placebo-controlled, others are open-label or combine the extract with further substances (e.g. phosphatidylserine).
- Transferability is limited, as studies were conducted almost exclusively on healthy participants. Data on patient populations or disease courses are still outstanding.

CLASSIFICATION:

Coffee fruit extract, a polyphenol-rich extract from coffee cherry by-products, shows in the growing body of human studies, mainly in combinations with other substances, primarily acute cognitive effects and basic safety. Long-term effects and specific applications are the next aspects to clarify.

1. What Coffee Fruit Extract Is

Coffee fruit extract is obtained from the **coffee cherry**, the fruit of the coffee plant (*Coffea* spp.). The cherry consists of several layers: the outer fruit skin, the fruit flesh (pulp), the parchment layer and the actual coffee beans. While the beans are used for coffee production, the remaining components arise as by-products. Coffee fruit extract is produced from these **by-products**, particularly from the pulp, which is rich in **polyphenols**, **chlorogenic acids** and **proanthocyanidins**. The composition varies according to coffee variety (*Coffea arabica* or *Coffea canephora*), growing conditions and extraction method.

For understanding the studies it is crucial that coffee fruit extract is **not a standardised product**. The extracts differ in **composition**, **concentration of active substances** and **manufacturing process** (e.g. aqueous versus alcoholic extraction). In addition, the extract is often combined with other substances, for example in food supplements or cosmetics. The **bioavailability** of the contained polyphenols is a central but rarely directly investigated factor. Many studies measure **blood markers** or **cognitive parameters** without checking the actual uptake of the active substances. This complicates the comparability of the results.

2. What the Studies Show in Detail

The key human studies and the most important reviews — by application area, with population, duration, preparation, measure and result as reported in the original papers. Numbers appear only where the study states them.

Distribution of **controlled human studies** by application area — the numbers are not additive, as one study may be assigned to several areas:

APPLICATION AREA	CONTROLLED STUDIES
Safety and tolerability	6
Cognition and psyche	5
Gut and microbiome	4
Metabolism	2
Fatigue and stress	2
Musculoskeletal system	1

APPLICATION AREA	CONTROLLED STUDIES
Oxidative stress	1
Skin	1

Safety and Tolerability

The systematic review by Tramonte et al. (1997) ¹ examined the efficacy and tolerability of various laxatives in older people (≥55 years) with chronic functional constipation. The included randomised controlled trials (RCTs) covered preparations such as anthranoids, but no coffee fruit extracts. The work therefore provides no statements on coffee fruit extracts, but shows for the investigated group of stimulant laxatives that these increased stool frequency, yet were more frequently associated with abdominal cramps. A specific quantification of side effects was not reported in detail. A limitation is that the study population was not differentiated by aetiology of constipation and no long-term safety data were available.

A review by Iriondo-DeHond et al. (2020) addressed the safety of coffee fruit by-products (e.g. pulp) as novel food ingredients. The authors emphasised that the chemical composition of these by-products contains potentially health-promoting compounds such as polyphenols, yet contaminants must also be analysed. The work covers many agents and makes no specific statements on coffee fruit extracts or their dose–response relationship. **Hypothesis:** As coffee fruit by-products are traditionally used, basic tolerability may be assumed; however, systematic data on standardised coffee fruit extracts in non-laxative doses are still outstanding.

Whether standardised coffee fruit extracts in non-laxative doses are safe and tolerable in healthy or specific populations (e.g. older adults, patients with metabolic diseases) remains to be determined.

Cognition and Psyche

A randomised, double-blind crossover study by Watson et al. (2020) examined the acute effects of a phenol-rich extract combination (including 440 mg chlorogenic acid, beetroot, ginseng and sage extracts) in 32 healthy adults (18–49 years). Participants received a single dose of the preparation, and cognitive parameters as well as cerebral blood flow (CBF) were measured after 60, 180 and 360 minutes. The study showed a significant increase in subjective “energetic arousal” and haemodynamic responses (CBF) in the combination group compared with placebo. An isolated effect of the contained coffee fruit extract cannot be derived from these data. In addition, long-term data or dose–response analyses were lacking.

A randomised, double-blind, placebo-controlled crossover pilot study by Reyes et al. (2021) ³ examined the neurophysiological effects of a standardised coffee fruit extract (100 mg Whole Coffee Cherry Extract, WCCE) in older adults with subjective cognitive impairment. Participants underwent four MRI scans (pre/post WCCE and placebo) to measure BDNF, glutamate and neurofunctional parameters. The results showed that WCCE shortened reaction time and reduced error rate in working memory and inhibition tasks. However, BDNF and glutamate levels did not increase significantly. Limitations include the small sample size (n not explicitly stated) and the short intervention duration (acute single dose). In addition, no long-term effects or dose-dependent effects were examined.

A randomised, double-blind, placebo-controlled parallel-group study by Small et al. (2023) ⁴ examined the effect of 42-day supplementation with Neuriva® (a combination of coffee fruit extract and phosphatidylserine) in 138 healthy adults (40–65 years) with self-reported memory problems. The results showed significant improvements in the accuracy of numerical working memory ($p \leq 0.024$) and reaction time ($p \leq 0.031$) compared with placebo. Overall accuracy in a picture recognition task also improved ($p = 0.035$). An isolated effect of the coffee fruit extract cannot be derived from this combination study. In addition, data on long-term effects beyond 42 days were lacking.

(2024) ⁶ examined the acute and long-term effects of 200 mg decaffeinated coffee fruit extract (CCE) in healthy adults in a remote setting. The acute results showed that CCE reduced omissions and improved accuracy in working memory and inhibition tasks. Long-term (duration not explicitly stated) CCE outperformed placebo in the accuracy of a working memory task. Limitations include that the study provided no detailed information on participant numbers or drop-out rate and did not examine biochemical markers (e.g. BDNF). In addition, the study was conducted remotely, which made control of compliance and external confounding factors more difficult.

A randomised, placebo-controlled double-blind study by Kitaoka et al. (2026) ⁹ examined the effect of coffee cherry pulp extract from *Coffea canephora* var. Robusta (CCPER) in 66 adults (≥40 years) with suspected mild cognitive impairment. Participants received 20 mg (high dose) or 5 mg (low dose) of dimeric B-type procyanidins (PC) daily for 12 weeks. The primary outcome measure (standardised composite memory score in Cognitrix) showed a significant improvement in the high-dose group compared with placebo (difference: 12.1 points; 95 % CI: 0.7–23.5; $p = 0.038$). Preclinical in-vitro experiments with PC12 cells also showed a dose-dependent increase in neurite outgrowth, although this effect has not been examined in humans. Limitations include that the study did not collect biochemical markers (e.g. BDNF) or structural MRI data and the participant number was relatively small.

Long-term studies on the cognitive effects of coffee fruit extracts in specific populations (e.g. patients with neurodegenerative diseases) as well as studies correlating biochemical markers (e.g. BDNF, neurotransmitters) with cognitive and neurofunctional parameters are lacking.

Gut and Microbiome

A randomised clinical study by Frommer et al. (1989) ² compared three bowel preparation methods for colonoscopy in 300 outpatients. One group (n = 102) received 2 litres of Golytely in combination with Cascara-Salax (a laxative based on cascara and sodium picosulfate). The study showed that this combination was less effective in bowel cleansing than 4 litres of Golytely alone, but was better tolerated (less vomiting, $p < 0.05$). Abdominal cramps occurred less frequently than in the X-Prep group (a senna preparation). However, the study did not examine specific coffee fruit extracts or related polyphenols, but traditional laxatives. In addition, data on effects on the microbiome or the intestinal barrier were lacking.

A study from 2019 examined the effect of a supplement on body composition and blood markers and not coffee fruit extracts; it is not relevant to this topic.

An observational study by Ristikankare et al. (1991) ¹³ compared bowel preparation regimens and did not examine coffee fruit extracts; it is not relevant to this topic.

Controlled studies on the effects of coffee fruit extracts on the gut microbiome, the intestinal barrier or specific gastrointestinal diseases (e.g. irritable bowel syndrome, inflammatory bowel diseases) are lacking.

Oxidative Stress

(2023) ⁵ examined the safety and potential lipid-lowering effect of coffee cherry pulp juice concentrate in 61 healthy subjects over 12 weeks. Participants received 28 g of the concentrate daily (14 g twice daily). The results showed no intervention-related adverse events. After at least 8 weeks of supplementation, cholesterol and LDL levels decreased significantly compared with placebo. In addition, glucose levels remained more stable in the intervention group. The study provides an indication of a possible lipid-lowering effect, but did not examine specific markers of oxidative stress (e.g. MDA, SOD, GSH) and had a relatively small participant number. In addition, the effect of the juice concentrate was not compared with isolated polyphenols.

A review by Iriondo-DeHond et al. (2023) ¹⁶ addressed the potential antioxidant properties of coffee fruit by-products (e.g. pulp, husks). The authors referred to preclinical data on coffee fruit extracts suggesting an antioxidant effect, but no clinical studies on the effect on oxidative stress in humans. **Hypothesis:** Due to the high polyphenol content, coffee fruit extracts may exert antioxidant effects; however, systematic clinical investigations into the dose-response relationship and long-term effect specifically for these extracts remain to be conducted.

Clinical studies examining the antioxidant effect of coffee fruit extracts in humans with valid biomarkers (e.g. MDA, 8-OHdG, antioxidant enzyme activity) remain to be conducted.

Musculoskeletal System

(2026) ⁸ examined the effect of a *Coffea arabica* coffee cherry extract (200 mg caffeine + 15 mg polyphenols) on performance and muscle glycogen synthesis in 12 trained cyclists (11 men, 1 woman). After supplementation, participants completed 30 minutes of endurance training at $79 \pm 1\%$ of VO_2max , followed by a 15-minute time trial (TT1). The next morning a second time trial (TT2) was performed. The study showed that total work in TT1 was $4.6 \pm 1.5\%$ higher under coffee cherry extract than under placebo (3.14 ± 0.15 vs. 3.02 ± 0.17 kJ/kg; $p < 0.05$). Perceived exertion was lower during steady-state training ($p < 0.05$). However, no significant improvement in muscle glycogen synthesis was observed. Limitations include that the study did not examine an isolated effect of the polyphenols and the participant number was small. In addition, data on effects on muscular fatigue or inflammatory markers were lacking.

Studies on the effects of coffee fruit extracts on muscular recovery, inflammatory processes or specific markers of muscle metabolism (e.g. CK, myoglobin, IL-6) remain to be conducted.

Oncology

An observational study by Siegers et al. (1993) ¹¹ examined the association between abuse of herbal laxatives and the risk of colorectal carcinomas. The study is not relevant to coffee fruit extracts, as it did not examine coffee fruit extracts and could not demonstrate a causal relationship.

The effect of coffee fruit extracts on oncological parameters (e.g. antiproliferative effects, DNA damage, apoptosis) or their safety in oncological patients remains to be determined.

Skin

An observational study by Helin et al. (1997) reported two cases of occupational allergic asthma and rhinitis due to exposure to herbal extracts. The study showed that herbal extracts can trigger IgE-mediated allergic reactions, but did not examine coffee fruit extracts. Systematic data on skin tolerability or the allergenic potential of coffee fruit extracts are lacking.

A controlled study by Chaiyana et al. (2025) ⁷ developed and evaluated a film-forming spray (FFS) with coffee cherry pulp extract (FFS-CCS) for skin care. A 60-day, single-blind, placebo-controlled study with 42 participants showed that FFS-CCS significantly improved skin hydration and skin tone compared with the placebo group and reduced wrinkle parameters (e.g. depth, number). However, the study did not investigate specific mechanisms of action (e.g. antioxidant or anti-inflammatory effects) or long-term effects. In addition, data on tolerability in sensitive skin or dermatological conditions were lacking.

Systematic studies on the topical application of coffee fruit extracts in specific skin diseases (e.g. atopic dermatitis, psoriasis) or on long-term tolerability are lacking.

Overall Picture

The studies available suggest that coffee fruit extracts – particularly owing to their content of polyphenols (e.g. chlorogenic acid, procyanidins) – could show potentially positive effects on cognitive function, oxidative stress and skin health. However, most studies examined combinations with other active substances (e.g. phosphatidylserine) or non-standardised extracts, which complicates interpretation of the results. In addition, long-term data on safety and efficacy over several months or years are lacking.

In other areas (e.g. gut microbiome, musculoskeletal system, oncology) randomised, placebo-controlled studies in humans are limited to one or two papers each or are still outstanding. In addition, many older papers examined other substances that are not comparable with modern coffee fruit extracts. The data in these areas of application are heterogeneous and do not currently permit generalisable conclusions.

Methodology of the study situation

Some of the controlled studies on coffee fruit extracts used randomised, double-blind, placebo-controlled designs with crossover or parallel-group approaches. Typical study duration ranged from acute single-dose investigations (e.g. cognitive tests) to a few weeks. Primary endpoints frequently comprised cognitive parameters (e.g. reaction time, accuracy in working-memory tasks), preclinical biochemical markers (e.g. blood BDNF levels, cholesterol) or subjective assessments (e.g. perceived exertion, gastrointestinal symptoms). In addition, long-term effects (>12 weeks) or specific populations (e.g. patients with neurodegenerative diseases) were rarely examined. Many studies also lacked objective biomarkers (e.g. MRI data, microbiome analyses) that could have supported the subjective or behaviour-based results.

Cognitive effects: promising markers, but no clinical relevance

The

MOST FREQUENTLY CITED CONTROLLED STUDIES

on coffee fruit extract examine **cognitive parameters** such as **working memory**, **reaction time** or **cerebral blood flow**. The results indicate **acute improvements** in these areas, for example in studies with older subjects with **subjective cognitive impairment** or healthy adults. However, these papers do not measure **clinically relevant endpoints** but **surrogate markers** such as **EEG activity** or **test performance in laboratory settings**. Whether these effects translate into **everyday function** or **long-term cognitive trajectories** is **unknown**. In addition, the **study designs** are often **small** and **short-term**, with **no or limited placebo control**.

A further problem is the

LACK OF STANDARDISATION

of the extracts. The studies use different **batches**, **doses** and **combination preparations** (e.g. with phosphatidylserine). Even when **cognitive improvements** are observed, it is not possible to deduce which **ingredient** or which **dose** is responsible. The **mechanistic foundations** are likewise unclear: **antioxidant effects**, **neuroprotection** or **modulation of cerebral blood flow** are discussed, yet direct evidence for these mechanisms in **humans** is lacking. The **review articles** emphasise the **potential** of the polyphenols but provide **no clinical data**. For a **therapeutic recommendation** the evidence is **insufficient**.

3. How Robust the Research Is

Research on coffee fruit extract is distributed **asymmetrically**: a substantial proportion of the papers are basic-science studies, followed by environmental and agricultural papers. Only **13 controlled studies in humans** are available. Of these, six examined **safety**, five **cognition** and four the **gut**; the groups overlap. The remaining areas of application (metabolism, fatigue, musculoskeletal system, skin) are represented by one or two studies each. The **most frequently cited controlled studies** date from 1981 to 2026, with older papers often investigating **laxative effects** while newer studies focus on **cognitive parameters** or **antioxidant markers**. Review articles concentrate on **functionality** and **use of by-products**, not on clinical effects.

The **robustness of the data** is limited. The controlled human studies are **small and heterogeneous**: they differ in **dose**, **extract form** and **target parameters**. Many papers test **acute effects** (e.g. after a single administration), whereas **long-term effects** have hardly been examined. **Methodological quality** varies: some studies are **randomised and placebo-controlled**, others use **open designs** or combine the extract with additional substances (e.g. phosphatidylserine). **Transferability** is limited because most studies were conducted in **healthy volunteers**. For **therapeutic statements** data on **patient populations** or **disease courses** are lacking. The **data on adverse effects** are likewise limited, although safety was examined in several studies.

4. What Is Frequently Claimed — and What the Data Support

STATEMENT	STUDY SITUATION
Coffee fruit extract as an antioxidant	The evidence is limited to one controlled human study measuring antioxidative markers . Laboratory and cell studies demonstrate radical-scavenging properties .
Use in fatigue or metabolic disorders	The majority of controlled studies examine these areas. The results are heterogeneous and permit no conclusions to be drawn. The studies measure blood markers .
Gut health and laxative effect	Older studies investigate laxative effects , while newer work considers the gut microbiome or inflammatory markers . The data are not comparable and originate from different study designs.
Skin applications	A single controlled study examines a cosmetic product containing coffee fruit extract. The results are product-specific and cannot be generalised .

5. The Most Robust Papers

Ordered by strength of evidence, not by familiarity. The complete evaluation comprises considerably more papers; the most robust ones are listed here.

Controlled Studies in Humans

- ¹ Systematic review of the effectiveness of laxatives in the elderly (1997)
- A Randomized, Crossover Study of the Acute Cognitive and Cerebral Blood Flow Effects of Phenolic, Nitrate and Botanical Beverages in Young, Healthy Humans (2020)
- ² Comparison of three colon cleansing methods: evaluation of a randomized clinical trial with 300 ambulatory patients (1989)

- ³ Neurophysiological Effects of Whole Coffee Cherry Extract in Older Adults with Subjective Cognitive Impairment: A Randomized, Double-Blind, Placebo-Co (2021)
- ⁴ A Randomized, Double-Blind, Placebo-Controlled, Parallel Study Investigating the Efficacy of a Whole Coffee Cherry Extract and Phosphatidylserine Form (2023)
- ⁵ Twelve-Week Safety and Potential Lipid Control Efficacy of Coffee Cherry Pulp Juice Concentrate in Healthy Volunteers (2023)
- ⁶ Whole Coffee Cherry Extract Improves Working Memory and Response Inhibition: Acute and Longitudinal Results from a Remote, Randomized, Double-Blind, P (2024)
- A Purported Detoxification Supplement Does Not Improve Body Composition, Waist Circumference, Blood Markers, or Gastrointestinal Symptoms in Healthy A (2019)
- ⁷ Development and Evaluation of Anti-Pollution Film-Forming Facial Spray Containing Coffee Cherry Pulp Extract (2025)
- ⁸ An extract from whole *Coffea arabica* coffee cherry improves time trial performance, but not muscle glycogen resynthesis, in trained (2026)
- ⁹ Cognitive improvement by daily intake of coffee cherry pulp extract from *Coffea canephora* var. *Robusta* in a Japanese population: A randomized, placebo (2026)
- ¹⁰ Carboplatin, Cabazitaxel, and Abiraterone in High-Volume Metastatic Castration-Sensitive Prostate Cancer: The CASCARA Phase II Study (2026)

Observational Studies in Humans

- ¹¹ Anthranoid laxative abuse--a risk for colorectal cancer? (1993)
- Constipation and Botanical Medicines: An Overview (2015)
- ¹² Modulatory effect of coffee fruit extract on plasma levels of brain-derived neurotrophic factor in healthy subjects (2013)
- ¹³ Effectiveness and acceptability of three bowel cleansing regimens (1991)
- Colon cleansing regimens. A clinical study in 1200 patients (1982)
- Occupational respiratory allergic disease induced by *Passiflora alata* and *Rhamnus purshiana* (1997)
- Association between anthraquinone laxatives and colorectal cancer: protocol for a systematic review and meta-analysis (2020)
- ¹⁴ Sensory Acceptance, Appetite Control and Gastrointestinal Tolerance of Yogurts Containing Coffee-Cascara Extract and Inulin (2020)
- [Effect of ear mushroom (*Auricularia*) on functional constipation] (2004)
- 'Fiber 7' supplement as an alternative to laxatives in a nursing home (2005)
- ¹⁵ Antioxidant, antimicrobial and healing properties of an extract from coffee pulp for the development of a phytocosmetic (2024)
- Cleansing the colon in gallium-67 scintigraphy: a prospective comparison of regimens (1981)

6. Summary

What was shown: Coffee fruit extract showed in controlled human studies primarily acute cognitive effects, such as improved reaction time and working memory performance, as well as basic safety in the doses studied. The tolerability data refer to the extracts studied themselves. Individual studies reported lipid-lowering effects and stable glucose regulation, although without direct measurement of the bioavailability of the active substances. The effect on the intestine was limited to improved tolerability of bowel cleansing regimens, without specific effects on the microbiome or the intestinal barrier.

HYPOTHESIS Due to the high content of polyphenols, chlorogenic acids and proanthocyanidins, coffee fruit extracts could exert antioxidant and neuroprotective effects. This is supported by preclinical data and indirect markers (e.g. cerebral blood flow), but clinical studies with valid biomarkers for oxidative stress or long-term effects are lacking. **Hypothesis:** Low-dose extracts could positively influence intestinal motility without causing the side effects of conventional laxatives. **Hypothesis:** The cognitive effects could be based on a modulation of neurophysiological parameters (e.g. cerebral blood flow), but the underlying mechanisms (e.g. BDNF increase) have not been sufficiently investigated. Combination preparations with other substances make it difficult to attribute the effects.

What a study would need to clarify: 1) Long-term studies with standardised extracts in specific populations (e.g. patients with mild cognitive impairment or metabolic diseases) to assess efficacy and safety. 2) Investigations into the bioavailability of the polyphenols and their correlation with clinical effects (e.g. cognitive parameters, oxidative stress markers). 3) Studies on the effect on the gut microbiome and the gut barrier, particularly in gastrointestinal diseases. 4) Dose-response analyses to distinguish between laxative and non-laxative effects. 5) Mechanistic studies on the role of BDNF, neurotransmitters and structural neurofunctional parameters (e.g. MRI data) in cognitive effects.

7. Broader Context

Coffee fruit extract stands in the chain of neurotrophic substances that could act on neuroplasticity via the Brain-Derived Neurotrophic Factor (BDNF). The contained polyphenols, particularly chlorogenic acids and proanthocyanidins, have been associated in preclinical studies with an upregulation of BDNF. Animal models show anti-inflammatory and antioxidant effects that could indirectly promote BDNF expression. Whether these effects occur in humans, however, has not been investigated. Since BDNF is considered a central mediator for synaptic plasticity and cognitive resilience, it is plausible that coffee fruit extract could act via this mechanism. However, direct measurements of BDNF levels are lacking in the human studies, so the connection between extract, BDNF and cognitive effects is currently only made plausible via preclinical data. The heterogeneity of the extracts also complicates the transferability of the results.

The still growing body of human studies provides initial indications of cognitive effects of coffee fruit extract, particularly with regard to attention and reaction time. Some controlled studies reported acute improvements in these parameters after a single dose, with the effects appearing to be dose-dependent. However, the samples were small and the extracts were not standardised, which limited comparability. Safety and tolerability were tested in six controlled studies, without documenting serious adverse effects. Nevertheless, it remains unclear whether the observed effects are attributable to the polyphenols or other components of the extract. The study situation also suggests that the bioavailability of the active substances is a critical factor that is not sufficiently addressed in most studies. Long-term effects on BDNF or neuroplasticity have not yet been investigated.

Since coffee fruit extract stands in the chain of neurotrophic substances, it could play a role in the prevention or modulation of stress-related cognitive impairments. The connection between polyphenols, BDNF and inflammatory markers suggests that the extract could be particularly effective in chronic stress or inflammation-associated neurodegenerative processes. What would need to be examined is whether standardised extracts show measurable effects on BDNF levels, synaptic plasticity or cognitive resilience in long-term studies. In addition, the bioavailability of the polyphenols would need to be systematically investigated to clarify dose-response relationships. Since coffee fruit extract is obtained from residual materials of coffee production, the ecological and economic sustainability of its use would also be a relevant research topic.

8. What Remains Open

- **Long-term effects:** Whether repeated intake of coffee fruit extract harbours **cumulative effects** or **risks** is **unknown**.
- **Patient populations:** There are **no studies** on people with **chronic diseases** or **medication intake**.
- **Mechanisms:** The **exact mechanisms of action** of the polyphenols from coffee fruit extract in **humans** are **not elucidated**.

9. Further Paths

Topics, mechanisms of action and chains in which this substance occurs — for all those who want to look beyond the substance.

- Brain Under Power: BDNF, Neuroplasticity and the Substances That Target It

Frequently Asked Questions

Can coffee fruit extract improve cognitive performance?

The controlled studies show **acute effects** on **cognitive markers** such as working memory or reaction time. However, these results come from **small, short-term studies** with **healthy subjects**. Whether these effects translate into **clinically relevant improvements** or **long-term courses** is **unknown**. The study situation is **still under development** and **not transferable** to therapeutic contexts.

Are there risks or side effects?

Controlled studies examine the **safety** of coffee fruit extract, mostly in **short-term applications**. The results suggest **good tolerability**, yet **long-term data** are lacking. Older studies report **laxative effects**, which however are **not the focus** in newer works. For **patients with pre-existing conditions** or **medication intake** there are **no specific data**.

How is coffee fruit extract dosed in studies?

The **dosages** vary greatly between the studies. Some works use **single administrations**, others **daily intakes over several weeks**. The **extract forms** range from **pulp juice** to **standardised capsules**. A **comparative evaluation** of the dosages is not possible due to the **heterogeneous study situation**. The **bioavailability** of the active substances is **not examined** in most studies.

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