



DOSSIER · SUBSTANCE

Kaempferol

This page summarises scientific research on **kaempferol**. The current state of research demonstrates broad interest in the **antioxidant** and **anti-inflammatory** properties of this flavonoid, though controlled human studies are rare. Most data originate from basic research or observational studies.

166

STUDIES IN
TOTAL

17

IN HUMANS

2

OF WHICH
CONTROLLED

5

IN ANIMALS

23

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-15

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

Kaempferol at a glance

ORIGIN:
Kaempferol is a flavonoid from the polyphenol group that occurs in numerous plants as a secondary plant metabolite. Particularly rich sources include green leafy vegetables such as spinach and kale, tea, broccoli, apples, onions, and medicinal plants like *Ginkgo biloba*. It serves the plant as protection against oxidative stress and UV radiation and is often present in glycosidically bound form, which affects its bioavailability.

STUDY STATUS:
166 evaluated publications · 2 controlled human studies · 15 observational studies · 32 review articles · 5 animal studies · 15 cell culture studies

- STRONGEST EVIDENCE:**
- **Fatigue and stress** A double-blind, placebo-controlled crossover study involving 33 working professionals showed that 10 mg of kaempferol administered over 2 weeks led to significant increases in physical activity and improved sleep quality. RMSSD (root mean square of successive differences) increased, indicating modulation of the autonomic nervous system; effects in humans remain to be confirmed.
 - **Cognition** A prospective observational study with 960 participants (aged 58–99) found a significant association between higher consumption of green leafy vegetables (containing kaempferol) and slower cognitive decline over 4.7 years. Kaempferol was one of the bioactive compounds with an independent association.
 - **Oxidative stress/oncology** A scoping review (2025) on chemotherapy-induced myelosuppression indicates that kaempferol-containing preparations showed preclinical evidence of increased leukocyte counts and bone marrow cell proliferation in animal and cell culture models; clinical relevance in humans is not yet investigated.
 - **Inflammatory processes** An observational study with 961 participants (aged 60–100) showed an association between higher flavonol intake (including kaempferol) and slower cognitive decline over 6.9 years. Direct inflammatory markers were not measured, so effects on inflammatory processes remain unclear.
 - **Safety and tolerability** A controlled human study examined the safety of kaempferol but did not provide detailed data on tolerability or adverse effects. The methodological basis remains limited.

- LIMITATIONS:**
- Most basic research on kaempferol originates from cell culture or animal models, the applicability of which to humans remains an open question.
 - Controlled human studies are rare, often conducted with small sample sizes and short intervention durations, leaving long-term effects and clinical relevance unclear.
 - The bioavailability of kaempferol varies widely among individuals, depending on food matrix, gut microbiota, and metabolism, which complicates the comparability of studies.

CLASSIFICATION:
Kaempferol is a promising flavonoid with antioxidant and anti-inflammatory properties. Its clinical relevance for humans remains to be clarified in further controlled studies.

1. What Kaempferol Is

Kaempferol is a **flavonoid** from the polyphenol group found in numerous plants. As a secondary plant metabolite, it serves the plant, among other functions, as protection against oxidative stress and UV radiation. Chemically, kaempferol belongs to the flavonols and has a characteristic structure with three hydroxyl groups, which are crucial for its biological activity. In nature, it often occurs in glycosidically bound form—coupled to sugars—which influences its solubility and bioavailability.

For understanding the study landscape, the **bioavailability** of kaempferol is central. After ingestion, it is metabolised in the gut by enzymes and gut microbiota, during which the glycosidic bonds are cleaved. Absorption occurs primarily in the small intestine, but a significant portion reaches the large intestine unchanged, where it is further metabolised by microorganisms. The resulting metabolites—such as glucuronides or sulphates—circulate in the blood and can accumulate in tissues. Measuring kaempferol in plasma or urine is methodologically challenging, as it exists in various forms and is rapidly degraded. Furthermore, bioavailability varies depending on the food matrix, accompanying substances, and individual gut microbiota, complicating the comparability of studies.

2. What the Studies Show in Detail

The key human studies and most important reviews—by application area, including population, duration, preparation, measured parameters, and results, exactly as reported in the original publications. Numbers are only included where the study provides them.

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

APPLICATION AREA	CONTROLLED STUDIES
Fatigue and stress	2
Oxidative stress	1
Oncology	1

APPLICATION AREA	CONTROLLED STUDIES
Bone and joints	1
Immune system	1
Safety and tolerability	1

Fatigue and Stress

In a double-blind, placebo-controlled crossover study involving 33 urban professionals (17 men, 16 women), the effects of 10 mg kaempferol over 2 weeks were investigated, followed by a 7-day washout phase¹. Participants continuously wore an accelerometer-based wearable (Fitbit Charge 4), which recorded daily physical activity (PA), heart rate (HR), and HR variability during sleep. The average wear time was 23.73 ± 0.04 hours per day. Under kaempferol intake, there was a significant increase in daily step count and distance covered compared to placebo. Additionally, outings, trips, leisure activities, and time spent on these activities at weekends increased. Heart rate decreased across all activity levels, while sleep quality improved. RMSSD (root mean square of successive differences of RR intervals) increased, suggesting these parameters may act as mediators of autonomic nervous system activity. A limitation is the short 2-week intervention period, which does not allow conclusions about long-term effects.

HYPOTHESIS The observed changes in heart rate and RMSSD may indicate modulation of the autonomic nervous system by kaempferol, which could be relevant for stress resilience. However, direct measurements of stress markers or subjective stress perceptions are lacking, making this interpretation speculative.

A 2022 review summarises the bioactive and therapeutic potential of kaempferol and quercetin, highlighting kaempferol as a secondary plant metabolite with antioxidant properties in preclinical and in vitro models²⁰. The review emphasises kaempferol's role in plant stress response and its potential transferability to the human organism, but notes that these findings are not yet confirmed in clinical settings. The applicability to humans thus remains an open question.

Oxidative Stress

A 2025 scoping review examined the effect of kaempferol on chemotherapy-induced myelosuppression (CIM) in preclinical models and patients with malignant tumours². The review included 13 studies, comprising nine animal experiments, one randomised controlled trial, two clinical observational studies, and one quasi-experimental study. Preclinical findings suggest that kaempferol or kaempferol-containing preparations may increase peripheral blood leukocyte counts and promote bone marrow cell proliferation in animal models. Mechanistically, a multi-target synergistic effect on the bone marrow is postulated. However, the clinical relevance of these preclinical findings for humans remains unclear due to the predominance of animal studies and the lack of large, controlled clinical trials. Furthermore, no standardised dosages or preparations were used, which complicates comparability.

A 2021 observational study analysed the phytochemical composition of guava leaves (*Psidium guajava* L.) and their health-promoting bioactivities, including kaempferol. The study describes the antioxidant properties of kaempferol in vitro and in preclinical models, noting that these findings do not yet establish relevance for human oxidative stress.

A 2019 review addresses the primary metabolites of *Crocus sativus* L. flowers, including kaempferol, and their antioxidant capacity¹⁴. The paper highlights theoretical and preclinical findings on potential applications of kaempferol in foods, phytopharmaceuticals, and cosmetics. The bioavailability and antioxidant effects of kaempferol in humans remain open questions.

Cognition and Psyche

A prospective observational study involving 960 participants (aged 58–99 years) from the *Memory and Aging Project* investigated the association between the consumption of green leafy vegetables and cognitive decline over a median period of 4.7 years³. Participants completed a validated food frequency questionnaire and underwent at least two cognitive tests. The results showed that higher consumption of green leafy vegetables (median 1.3 servings/day in the highest quintile) was associated with slower cognitive decline ($\beta = 0.05$ standardised units, $p = 0.0001$). This corresponded to an approximately 11-year delay in decline compared to the lowest quintile. Kaempferol was one of the bioactive compounds studied and was significantly associated with slower cognitive decline ($\beta = 0.04$, $p = 0.002$). The observational design precludes causal inferences, and the study did not quantify actual kaempferol intake.

A 2018 review describes the pharmacological properties of saffron petals (*Crocus sativus*), which contain kaempferol among other compounds. The paper summarises preclinical findings on antidepressant, antioxidant, and neuroprotective effects. Clinical data on the impact of kaempferol on cognition or mental health in humans are not provided, and the relevance of these results for human health remains to be established.

Metabolism

Limitations include the observational nature of the study, which precludes causal inferences, and the lack of standardisation of kaempferol intake.

A 2020 review summarises the potential effects of *Ginkgo biloba* on metabolic syndrome, with kaempferol identified as one of the active constituents¹⁶. The paper describes preclinical and clinical evidence of antidiabetic, antihypertensive, and lipid-modulating properties but notes that the specific relevance of kaempferol for human metabolism has not yet been sufficiently investigated due to heterogeneous study designs and theoretical considerations.

Inflammatory Processes

An observational study involving 961 participants (aged 60–100 years) from the *Rush Memory and Aging Project* examined the association between flavonol intake, including kaempferol among other flavonoids, and cognitive decline over a median period of 6.9 years⁴. The results showed that higher flavonol intake was associated with slower cognitive decline, but the study did not isolate the effect of kaempferol specifically. Limitations include the observational nature of the study, which precludes causal inferences, and the lack of direct measurement of inflammatory markers.

The results showed that patients with metabolic syndrome (MetS) consumed significantly less kaempferol than healthy participants ($p = 0.04$). Furthermore, kaempferol intake was inversely correlated with the severity of MetS parameters ($p = 0.01$). However, no direct inflammatory markers or clinical outcomes were measured, so the association with metabolic health in humans remains observational.

A 2023 review summarises the potential cardiovascular benefits of polyphenols, including kaempferol among others, and describes their antioxidant and anti-inflammatory properties. However, the paper remains limited to preclinical and theoretical data for polyphenols as a class, so the clinical relevance of kaempferol specifically for humans has not yet been established.

Viral Infections

A 2024 review summarises the pharmacological potential of flavonoids, including kaempferol among others, and describes their antiviral, antibacterial, and antioxidant properties based on preclinical and in vitro studies¹⁸. The paper suggests a potential antiviral effect of flavonoids like kaempferol, but these findings are not yet confirmed in clinical studies involving humans.

Oncology

A 2022 review summarises the mechanisms of kaempferol in the treatment of diabetes and describes its potential role in preventing β -cell apoptosis and insulin resistance based on preclinical studies²¹. The paper provides no clinical data on the relevance of these mechanisms in humans.

Overall Picture

The available studies suggest a broad pharmacological potential for kaempferol, particularly in the areas of oxidative stress, inflammatory processes, metabolism, and cognition. However, the evidence is primarily derived from observational studies, preclinical models, or reviews that do not permit causal inferences. The few controlled clinical trials, such as the crossover study on fatigue and stress¹, show promising effects but are limited by short intervention durations and small sample sizes.

Across all fields, research on kaempferol is still in its early stages. Systematic, randomised, and placebo-controlled intervention studies with standardised dosages, long-term endpoints, and direct biomarkers are lacking to conclusively assess the clinical relevance of kaempferol in humans.

Methodology of the Evidence Base

The key studies on kaempferol encompass a broad spectrum of study designs, including double-blind, placebo-controlled crossover studies (e.g.,¹), prospective observational studies (e.g.,³), and reviews covering multiple flavonoids, among them kaempferol (e.g.,^{2, 20, 18}). Intervention durations in clinical studies on kaempferol are typically short (2–4 weeks), whereas observational studies feature follow-up periods of up to 6.9 years. Typical endpoints include physical activity, sleep quality, cognitive function, metabolic parameters, and inflammatory markers. However, standardised dosages, direct biomarker measurements (e.g., kaempferol plasma levels), and long-term clinical endpoints are systematically lacking, which would enable a definitive assessment of therapeutic relevance.

Kaempferol: From Laboratory to Application – What the Studies Really Support

The discrepancy between

BASIC RESEARCH

and **clinical application** is particularly pronounced for kaempferol. While **cell culture** and **animal studies** consistently demonstrate **antioxidant**, **anti-inflammatory**, and **antiproliferative** effects, robust data from **controlled human studies** are lacking. The existing controlled trials suggest potential effects—such as on **fatigue** or **sleep quality**—but their validity is limited by **small sample sizes** and **lack of replication**. Furthermore, it remains unclear whether the mechanisms observed in vitro are relevant in the human organism, as kaempferol undergoes extensive metabolism after ingestion and its **bioavailability** varies individually.

Another issue is the

HETEROGENEITY OF THE EVIDENCE BASE

. Kaempferol is rarely studied in isolation but is typically investigated as part of a **plant extract** or **food matrix**, which complicates the attribution of specific effects. Even in **observational studies**, kaempferol is often not differentiated from other flavonoids, leaving it unclear whether the observed associations are truly attributable to kaempferol. Moreover, most studies focus on **surrogate parameters** such as **oxidative stress** or **inflammatory markers**, while **clinically relevant endpoints**—such as **disease progression**—are scarcely investigated. Research faces the challenge of developing **standardised measurement methods** and **clinically meaningful study designs**.

3. How Robust the Research Is

Research on **kaempferol** is strongly focused on basic science: Of the evaluated studies, the majority fall under **basic research**, with a further portion comprising **review and mechanism studies** and a smaller share involving **cell culture experiments**. Human studies have been conducted, most of which are **observational**, with only a few being **controlled**. The controlled studies explore applications such as **fatigue**, **antioxidant effects**, **oncology**, **bone health**, **immune system**, and **safety**. The most cited controlled study (2024) examined the impact of kaempferol on **physical activity and sleep quality**, while a more recent review (2025) summarised effects of flavonoids, including kaempferol, on **chemotherapy-induced myelosuppression**. However, the most cited works overall are **observational studies** or **reviews** discussing the potential of kaempferol in **cardiovascular health** or as a **pharmacologically active plant compound**.

The robustness of the data is limited by the **methodological distribution**. The overwhelming majority of studies derive from **in vitro or animal models**, the applicability of which to humans remains unclear and has not been investigated in clinical settings. Even the **observational human studies** can only demonstrate **associations**, not **causal effects**. The few controlled studies provide initial indications of possible effects but are conducted with small sample sizes and short observation periods. Furthermore, there is a lack of **dose-finding studies** and **long-term data**, which are essential for therapeutic application. Research in this area is still in its early stages, particularly regarding the **clinical relevance** of the observed preclinical and observational effects.

4. Common Claims and the Supporting Evidence

STATEMENT	EVIDENCE
Kaempferol has been investigated in the examined dose ranges for its antioxidant and anti-inflammatory effects.	Most data originate from cell culture and animal studies . Controlled human studies demonstrate associations , but no causal effects . The clinical relevance remains unclear.
Kaempferol has been studied for its potential to support the immune system; the results are inconsistent.	A controlled study examined immune parameters , but the results are preliminary. The available data are insufficient to demonstrate a therapeutic effect .
Kaempferol has been investigated for cancer prevention; the controlled study results are inconsistent.	A controlled study examined oncological effects , but the evidence is limited . Most of the research is preclinical and does not allow conclusions to be drawn about clinical relevance.
Kaempferol has been studied in relation to bone health; the data are insufficient for an assessment.	A controlled study examined bone markers , but the data are insufficient to confirm a clinical effect .

5. Profile: Molecule and Charge

Kaempferol is not a single molecule but a **mixture**—there is no molecular formula or fixed molecular mass. What can be described are functional groups, charge behaviour, and redox properties, which are the focus of the next section.

6. Charge, Electrons, and Radicals

Kaempferol exhibits electrochemical properties linked to its antioxidant activity. In human tissue, PEG-modified kaempferol liposomes were measured to have a zeta potential of -37.0 ± 8.19 mV, indicating a negative surface charge ⁹. This charge may influence interactions with cations and enhance stability in biological systems. In cell cultures, its radical-scavenging ability (e.g., via electron transfer) has been observed, such as through inhibition of ROS production or modulation of signalling pathways like NF- κ B ¹⁰. Antioxidant activity correlates with the molecule's structure, particularly its hydroxyl groups and double bonds ^{12 13}.

Direct electrochemical measurements of kaempferol itself in humans or human tissue are not available, though its effects in the context of oxidative stress have been studied. PEGylated liposomes improve systemic availability, suggesting controlled release ⁹. The observed increase in ROS in human lung regions ⁵ indicates a possible interaction with redox processes, though without direct evidence of kaempferol-specific effects. In tissue extracts with high flavonoid content—including kaempferol—radical-scavenging and anti-inflammatory properties have been noted ¹¹. Whether these stem from direct electron transfer or indirect signal modulation remains to be clarified. Further investigations into charge distribution, cation exchange capacity, and ROS modulation in humans would be necessary.

7. Interactions with Other Substances

Substances from this platform that have been **jointly** investigated or discussed with kaempferol in human studies and reviews—whether in combination, comparison, or via shared mechanisms. The number indicates studies in which both appear.

SUBSTANCE	STUDIES FEATURING BOTH	OF WHICH CONTROLLED IN HUMANS
Quercetin	45	0
Chronic inflammation	33	0
Stress, cortisol, and inflammation	16	1
Anthocyanins (berries)	14	0
Apigenin	14	0
Green tea and EGCG	8	0
Fisetin	8	0
Turmeric and curcumin	7	1
Ginkgo biloba	7	0
Cocoa flavanols	6	0

Evidence from review articles exists regarding interactions between kaempferol and medicinal drugs. Kaempferol demonstrated synergistic effects when combined with anthracycline antibiotics, suggesting a potential enhancement of therapeutic efficacy. Furthermore, a significant improvement in the effectiveness of antibiotics such as colistin or penicillin was described when administered concurrently with kaempferol ¹⁵. At the molecular level, an observational study in humans indicated a direct interaction between kaempferol and NOX2, which could influence enzymatic processes ⁵. Whether these interactions are clinically relevant remains to be investigated.

In observational studies in humans, an enhanced association was observed between flavonoids (including kaempferol) and magnesium (Mg). It has not been differentiated whether kaempferol specifically interacts with Mg or if this is a class effect of flavonoids.

8. Overdose, Tolerability, and Limitations

Limited data are available on overdose, toxicity, and adverse effects of kaempferol. In human tissue (HepG2 cells), a kaempferol derivative (PEG-LP-KP) exhibited significant cytotoxicity with an IC₅₀ value of 153.57 μM ⁹. At non-cytotoxic concentrations, extracts containing kaempferol reduced the secretion of inflammatory markers such as IL-6 and IL-8. Review articles indicate potential interactions with anthracyclines, for example, through modulation of antioxidant signalling pathways or inhibition of membrane proteins affecting drug transport ¹⁷. Clinical studies on toxicity or upper limits are lacking. Preclinical data suggest cytotoxic effects, while clinical evidence regarding safety remains insufficient ¹⁹.

No contraindications or specific risk groups have been explicitly established. Review articles describe the safety of flavonoids such as kaempferol as not yet conclusively clarified, as most findings originate from preclinical studies ¹⁹. Observations in humans demonstrate antioxidant, anti-inflammatory, and cytotoxic activities ¹⁸, but no concrete dose-response relationships for adverse effects have been identified. Interaction with chemotherapeutic agents (e.g., anthracyclines) could influence toxicity or efficacy ¹⁷. Systematic investigations into upper limits or long-term toxicity are not available. Further clinical studies are required to define dose ranges and risks.

9. The Most Robust Studies

Ranked by evidential strength, not by prominence. The full evaluation includes significantly more studies; only the most reliable are listed here.

Controlled Studies in Humans

- ¹ Effect of kaempferol ingestion on physical activity and sleep quality: a double-blind, placebo-controlled, randomised, crossover trial (2024)
- ² [Kaempferol in improving chemotherapy-induced myelosuppression: A scoping review] (2025)

Observational Studies in Humans

- ³ Nutrients and bioactives in green leafy vegetables and cognitive decline: Prospective study (2018)
- Guava (*Psidium guajava* L.) Leaves: Nutritional Composition, Phytochemical Profile, and Health-Promoting Bioactivities (2021)
- The effects of Ginkgo biloba on metabolic syndrome: A review (2020)
- ⁴ Association of Dietary Intake of Flavonols With Changes in Global Cognition and Several Cognitive Abilities (2023)
- The association of dietary flavonoids, magnesium and their interactions with the metabolic syndrome in Chinese adults: a prospective cohort study (2021)
- The Relationship between Dietary Flavonols Intake and Metabolic Syndrome in Polish Adults (2023)
- Dietary Isorhamnetin Intake Is Inversely Associated with Coronary Artery Disease Occurrence in Polish Adults (2022)
- The favourable impacts of cardamom on diabetes-related complications: A comprehensive systematic literature review (2024)
- ⁵ Oxidative stress-induced endothelial dysfunction drives mechanical and infectious lung injury: Therapeutic potential of kaempferol in males (2026)
- Metabolomics Deciphering the Potential Biomarkers of Hengqing I Prescription against Vascular Dementia (2022)
- From Traditional Use to Molecular Mechanisms: A Bioinformatic and Pharmacological Review of the Genus *Kalanchoe* with In Silico Evidence (2025)
- ⁶ Effects of kaempferol on weather-related pain: an open-label pilot study of subjective headache and other discomforts in pre-intervention and intervention (2025)
- Correction of hypoxic effects on target organs in pneumonia using phytotherapy (2025)
- ⁷ Kaempferol protects melanocytes from ferroptosis by modulating the NF-κB/PTGS2 signalling axis in vitiligo (2026)
- ⁸ Kaempferol enhances ER-mitochondria coupling and protects motor neurons from ER stress and mitochondrial dysfunction in C9ORF72-ALS (2024)

Studies on Human Tissue

- Mulberry Leaf Compounds and Gut Microbiota in Alzheimer's Disease and Diabetes: A Study Using Network Pharmacology, Molecular Dynamics Simulation, and (2024)
- Improvement of glucolipid metabolism and oxidative stress via modulation of the PI3K/Akt pathway in insulin-resistant HepG2 cells by chickpea flavonoids (2024)
- Kyoh[®] Rocket Leaf Extract Regulates Proliferation and VEGF and FGF7 Expression in Human Dermal Follicle Papilla Cells (2025)
- Phytochemical Profiling and Anti-Inflammatory Activity of *Rubus parvifolius* Leaf Extract in an Atopic Dermatitis Model (2025)
- ⁹ PEGylated liposomes enhance the pharmacokinetics, biodistribution, anticancer efficacy, and safety of kaempferol, a phytomolecule enrolled in clinical (2026)
- Phenolic-Rich Lentil Extracts Regulate Cytokine Production, Metabolic Pathways and Barrier Function in Intestinal Epithelial Cells (2026)
- Chemical Profile and Evaluation of the Growth-Inhibitory, Anti-Inflammatory, and Antioxidant Activity Potential of Polar Extracts of *Reseda a* (2026)

10. Summary

The available data on kaempferol suggest a broad pharmacological potential, particularly in the areas of antioxidant and anti-inflammatory effects, cognition, and metabolism. A controlled crossover study on fatigue and stress showed improvements in physical activity, sleep quality, and autonomic parameters. Observational studies also suggest associations between kaempferol intake and slowed cognitive decline. However, the evidence remains limited due to the predominantly observational nature of the studies and the lack of direct biomarker measurements. The few controlled studies are methodologically constrained, for example, by short intervention durations or small sample sizes, so causal effects have not been established.

HYPOTHESIS The antioxidant and anti-inflammatory properties of kaempferol consistently demonstrated in preclinical models may also be relevant in humans, particularly in modulating stress resilience and cognitive health. The observed effects on the autonomic nervous system (e.g., RMSSD) suggest a potential role in regulating fatigue states. Furthermore, the association between kaempferol intake and slowed cognitive decline may indicate neuroprotective mechanisms, such as the reduction of oxidative stress or inflammatory processes. However, direct evidence of these mechanisms in human studies is lacking, so these assumptions remain speculative. The heterogeneity of the evidence base—due to varying food matrices or the absence of standardised dosages—also complicates the derivation of specific therapeutic recommendations.

To conclusively assess the clinical relevance of kaempferol, systematic, randomised, and placebo-controlled intervention studies with standardised dosages and long-term endpoints would be required. These should incorporate direct biomarkers (e.g., kaempferol plasma levels, oxidative stress markers, or inflammatory parameters) to clarify the underlying mechanisms. Additionally, dose-finding studies would be necessary to determine optimal therapeutic concentrations. Long-term studies with sufficiently large sample sizes would be needed to investigate the effects on clinically relevant endpoints such as cognitive decline, metabolic health, or oncological parameters. Only through such studies could it be determined whether the effects observed in preclinical models are indeed transferable to humans and whether kaempferol can be used as a therapeutically effective substance.

11. Unresolved Questions

- **Bioavailability:** How much does kaempferol absorption vary between individuals, and which factors influence it?
- **Long-term effects:** Are there robust data on the impact of regular kaempferol intake over months or years?
- **Clinical endpoints:** Which **hard endpoints** (e.g., disease progression, mortality) are influenced by kaempferol, and how?

12. Further Paths

Topics, mechanisms and chains in which this substance appears — for those who want to look beyond the substance.

- Interaction network

Frequently Asked Questions

Can kaempferol be recommended as a dietary supplement?

The current evidence is insufficient to support a **therapeutic recommendation**. While **basic research studies** show promising effects, controlled human studies are **rare** and methodologically limited. Supplementation should only be considered within the context of **medically supervised use**, particularly in the presence of existing conditions or concomitant medication.

How is kaempferol measured in studies?

Kaempferol is typically quantified in **plasma** or **urine** using **HPLC** or **mass spectrometry**. Since it undergoes extensive metabolism following absorption, **glucuronides** or **sulphates** are often measured instead. However, **bioavailability** varies depending on the food matrix and individual gut microbiota, complicating the comparability of studies.

Are there any drug interactions?

In vitro studies have observed **inhibition of cytochrome P450 enzymes**, which could theoretically lead to drug interactions. However, **clinical data** are lacking, and no robust conclusions can be drawn. Caution is advised when co-administering with **anticoagulants** or **chemotherapeutic agents** until further studies are available.

Sources

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- 7 Kaempferol protects melanocytes from ferroptosis by modulating the NF- κ B/PTGS2 signaling axis in vitiligo
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- 9 PEGylated liposomes enhance the pharmacokinetics, biodistribution, anticancer efficacy, and safety of Kaempferol, a phyto molecule enrolled in clinical trials
Kumar AR, Dharshini MD, Devan AR, Unni AR, Sithara MS, Nair B et al. · 2026
- 10 In summary, these compounds modulate signaling pathways, including nuclear factor kappa beta, wingless-related integrati...
· 2025
- 11 The Fr extract exhibited the highest anti-inflammatory and radical scavenging properties, likely due to its higher flavo...
· 2026
- 12 However, 3-glycoside substitution may have hindered dimer formation, thereby allowing the FLVs to retain strong free rad...
· 2021
- 13 Notably, myricetin that contained three hydroxyl groups on the B-ring, along with a 2,3-double bond in conjugation with ...
· 2024
- 14 Bioactivity and Bioavailability of the Major Metabolites of Crocus sativus L....
· 2019
- 15 In addition, we also reviewed the synergistic combination of kaempferol with antibiotics, such as the combination of kae...
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· 2020
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· 2024
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International Health Research

Research, put in context. Every statement leads to the original paper; the decision in the individual case rests with the treating professional.
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