

# Effectiveness of Turmeric Green Tea on Physiological Parameters and Quality of Life Among Women with Uterine Fibroids: Review Paper

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Publication Date: 2025/06/25

**Abstract:** **Introduction:** Uterine fibroids, frequently referred to as leiomyomas or myomas, are the most widespread kind of benign uterine tumour. They can range in size, shape, and position within the uterus from unnoticeable nodules to huge masses that can deform the uterus. They are made up of cells of smooth muscles and fibrous connective tissue. Clinical manifestations include obstetric issues, infertility, bulk symptoms, abnormal bleeding, pelvic lumps, and pelvic discomfort. Over one third of women with leiomyomas will seek therapy as a result of their symptoms. It has a significant impact on 50% of women who are of reproductive age and 80% of women by beyond the age of 50. **Aim:** The aim of this study is to find out the effectiveness of Turmeric Green Tea on Physiological parameters and quality of life among women with uterine fibroids. **Methodology:** Intervention- Turmeric Green Tea. Here is a paraphrased version of your statement. **Study Design:** A randomized controlled trial utilizing a pre-test and post-test design with a placebo control group. **Participants:** Women diagnosed with uterine fibroids experiencing mild to moderate symptoms. **Setting:** Liangmai Community, Manipur. **Outcome:** This review result will show that Turmeric Green will be effective on physiological parameters and quality of life among women uterine fibroids.

**Keywords:** Uterine Fibroid/Leiomyomas/Uterine Tumour, Physiological Parameters, Quality of Life.

**How to Cite:** Ringkangmai Liangkiuwiliu; Dr. Sonal Chand; Dr. Mohnyca Yumnam; Dr. Imran Khan (2025) Effectiveness of Turmeric Green Tea on Physiological Parameters and Quality of Life Among Women with Uterine Fibroids: Review Paper. *International Journal of Innovative Science and Research Technology*, 10(6), 1786-1790. <https://doi.org/10.38124/ijisrt/25jun1227>

## I. INTRODUCTION OR BACKGROUND OF THE STUDY

Uterus fibroids represent the most prevalent form of benign tumor found in the uterus. These growths can vary significantly in size, shape, and location—appearing inside the uterus, on its exterior, within its walls, or even attached by a stem. Fibroids can be as small as a pea or grow to a remarkable size of over 5-6 inches in diameter (ACOG, 2023). They are more prevalent in nulliparous people or those

with infertility for only one kid, and they can develop as a solitary tumor or in clusters (Neelam K., et al. 2017). According to histology, uterine leiomyoma, myoma, or fibromyoma are made of fibrous connective tissue and smooth muscle. Between 20% and 40% of women will receive a uterine fibroids diagnosis. Black women are roughly twice as likely as white women to have the disorder (Anupama, 2014).

One of the most popular drinks in the world, green tea, is made from the *Camellia sinensis* tea plant. Compared to other types of tea, it has a far higher concentration of catechins, which are polyphenolic chemicals, and more antioxidants. The main green tea catechin, epigallocatechin-3-gallate (EGCG), has been researched for possible therapeutic uses in a variety of illnesses, including those that impact the female reproductive system. As an antioxidant and pro-oxidant, EGCG has therapeutic benefits by altering numerous cellular processes that are crucial to the development of disease. This article summarizes what is now understood about the positive effects of green tea on benign gynecological conditions. Green tea's anti-fibrotic, anti-angiogenic, and pro-apoptotic properties help endometrial and reduce the intensity of uterine fibroids' symptoms. It can also lessen the broad hyperalgesia brought on by adenomyosis and dysmenorrhea, as well as decrease uterine contractility. EGCG can be used as a symptomatic treatment for PCOS and menopause, where it reduces weight gain and osteoporosis, despite its contentious function in infertility (Hazimeh D., et al. 2023)

Green tea has been effective in reducing LDL cholesterol, preventing abnormal blood clot formation, regulating lipids, and decreasing platelet aggregation and smooth muscle cell migration. This is particularly important since thrombosis is a leading cause of strokes and heart attacks. These elements have the potential to lessen heart-related disorders. (-)-epigallocatechin-3-gallate is the main chemopreventive component of green tea, and numerous research labs are examining the molecular mechanisms underlying these actions. Green, oolong, and black teas are made from the leaves of the *Camellia sinensis* plant. Green tea is distinguished by its different processing techniques; in particular, the leaves are steam-cooked to stop the EGCG component from oxidizing (Sinija and Mishra, 2008).

The biochemical pathways that connect the ingestion of green tea to the formation of uterine fibroids have not been thoroughly studied. However, findings from animal models and in vitro research point to a number of important modes of action for EGCG, including impacts on enzyme activity, proliferation, and apoptosis. Specifically, in Eker rats, EGCG has been demonstrated to suppress proliferation and trigger apoptosis (Zhang, D. et al., 2010).

The use of EGCG in patients with uterine fibroids is currently the subject of an expanding amount of research. 800 mg of green tea extract (containing 45% EGCG) is a safe therapy option for women who are experiencing symptoms due to uterine fibroids, according to a double-blind, placebo-controlled randomized clinical trial (Roshdy, E. et al. (2013).

Thirty-nine women aged 18 to 40 with or without uterine fibroids were enrolled in this randomized, open-label prospective cohort study and assigned to one of three treatment groups: 800 mg of EGCG daily alone, 800 mg of EGCG plus clomiphene citrate 100 mg for five days, or 800 mg of EGCG plus letrozole 5 mg for five days. No subjects showed symptoms of drug-induced liver impairment, nor did any have serum folate levels that exceeded the normal range.

Accordingly, our results show that 800 mg of EGCG per day, either by itself or in conjunction with letrozole or clomiphene citrate, is well tolerated and does not cause folate insufficiency or liver toxicity in women of reproductive age (Siblini, H., et al., 2023).

Numerous studies have demonstrated the molecular-level immunoregulatory, anti-inflammatory, anti-carcinogenic, and antioxidant qualities of curcumin, one of the three main curcuminoids present in the turmeric plant (*Curcuma longa*). By focusing on anti-apoptotic proteins, it can stop the growth of malignancies, especially uterine myomas. Malik et al. 2009, in vitro study showed that curcumin prevented uterine leiomyoma cells from proliferating. It was discovered that the curcumin molecule inhibited the production of fibronectin, an extracellular matrix (ECM) component, and also increased the apoptotic pathway. Tsuiji et al. (2010) also observed that curcumin influences the activation of peroxisome proliferator-activated receptor-gamma.

The health advantages of both components are combined in turmeric green tea, which offers increased nutritional value and possible therapeutic effects. This beverage's main features are its high antioxidant content, which is mainly curcumin and catechins; its anti-inflammatory effect; its potential to fight cancer; its support for cardiovascular health; its potential to improve cognitive function; its aid in weight management; its unique flavor profile; its easy preparation methods; and its enhanced bioavailability when combined with black pepper. This beverage may help lower oxidative stress, reduce inflammation, protect against some types of cancer, enhance cognitive and cardiovascular performance, help control weight, and support digestive processes.

#### ➤ Research Problem

This review was guided by the following research question: The clinical outcomes of using turmeric green tea, including symptom alleviation and quality of life among women with uterine fibroids.

## II. METHOD

A review with a narrative style was created. Relevant studies were found via a methodical computerized search. The study solely included the original research papers. PubMed, EBSCO, Research Gate, Google Scholar, Shodhganga, and Scopus were the electronic databases searched. The extant literature was carefully chosen to be included in this narrative review.

#### ➤ Inclusion Criteria

- The studies that directly relate to the understanding of how women with uterine fibroids utilize green tea and turmeric (curcumin).
- The studies that specifically address women with uterine fibroids' knowledge, usage, and efficacy of turmeric green tea.

- The paper, which is readily available in full text online.
- The coursework that is finished in English.
- Research papers released starting in 2008

➤ *Exclusive Criteria*

- The studies that are not listed in the journal database
- Low-quality journal articles
- The research was published in a journal without an ISSN number
- Research articles published in regional languages

### III. RESULTS AND DISCUSSION

**Siblini H, et al., (2023).** Early Safety Evaluation of Epigallocatechin Gallate (EGCG) for the Treatment of Unexplained Infertility Associated with Uterine Fibroids (Pre-Friend Trial). Here, we carried out the pre-FRIEND study (NCT04177693) to assess the safety of EGCG in premenopausal women before starting that experiment. Thirty-nine women aged  $\geq 18$  to  $\leq 40$  years with or without uterine fibroids were enrolled and randomized to one of three treatment arms: 800 mg of EGCG daily alone, 800 mg of EGCG daily with clomiphene citrate 100 mg for 5 days, or 800 mg of EGCG daily with letrozole 5 mg for 5 days. No individual showed symptoms of drug-induced liver impairment, and no subject had serum folate levels beyond the normal range. As a result, our findings indicate that a daily dosage of 800 mg of EGCG alone or in combination with clomiphene citrate or letrozole (for 5 days) is well tolerated and has no association with liver toxicity or folate deficit in reproductive-aged women.

**Rebekka B. et al., (2021).** Women with oligo- or asymptomatic uterine myomas who took green tea extract (GTE) capsules on a daily basis were followed for six months to assess their quality of life, myoma-related complaints, and side effects. Methods: The subjects were interviewed and evaluated at the start of the study (T1) and six months later (T3). Their quality of life was measured using an SF-12 questionnaire, and myoma-related complaints were found using a self-created myoma symptom questionnaire. To assess changes in myoma size, we used vaginal sonography. After three and six months, side effects were assessed through interviews. The median age of the 25 participants was 45. SF-12 results showed a significant improvement in physical health after six months of GTE capsule use (T1: M = 52.73; T3: M = 55.86;  $p = 0.019$ ), but no change in mental health ( $p = 0.674$ ). Myoma size, lab results, and symptoms were unaffected. No significant side effects were reported. Conclusion: GTE capsules improved physical health scores but had no impact on mental health, myoma size, or overall quality of life.

**Adham B. et al. (2022).** A randomized controlled experiment on the use of green tea to treat symptomatic uterine fibroids. After three months of therapy, there was a significant difference ( $P < 0.001$ ) in mean UFV between the study group ( $178.6 \pm 21.9 \text{ cm}^3$ ) and the symptomatic treatment group ( $3117 \pm 195.9 \pm 23.5 \text{ cm}^3$ ).

**Roshdy E. et al. (2013).** Green tea extract treatment for symptomatic uterine fibroids: a randomized controlled clinical trial. In a sample of 39 women, 33 attended all appointments. The placebo group (11 women) had a 24.3% rise in fibroid volume, whereas those using green tea extract (22 women, 800 mg/day) had a 32.6% decrease ( $P = 0.0001$ ). Symptoms dropped by 32.4% ( $P = 0.0001$ ), but quality of life increased by 18.53% ( $P = 0.01$ ). The EGCG group also saw considerable anemia improvement ( $0.7 \text{ g/dL}$ ,  $P = 0.02$ ) and a decrease in monthly blood loss from 71 mL to 45 mL ( $P = 0.001$ ).

**Bai T. et al. (2022).** The combination of natural chemicals Crila and EGCG has stronger anti-proliferative effects on human uterine fibroid cells than solo therapies. Using various experimental approaches, HuLM cells were treated with varying doses of Crila, either alone or in combination with EGCG. Without causing apoptosis, Crila and 25 and 50  $\mu\text{M}$  EGCG worked together to restrict HuLM cell viability by reducing cell proliferation, as seen by lower PCNA levels at the mRNA and protein levels.

**Porcaro G. et al. (2020).** A randomized controlled study of vitamin D and epigallocatechin as a novel and promising treatment for future uterine myomas. The total myoma volume reduced by 34.7% in the treated group, but grew by 6.9% in the control group. Along with a decrease in the SS, women receiving vitamin D, EGCG, and vitamin B6 reported an increase in their quality of life.

**Biro, R. et al. (2021).** Efficacy of EGCG-enriched green tea extract capsules in uterine myomas: observational research. During the six months of using GTE capsules, the physical cumulative score of the SF-12 significantly improved, according to the SF-12 questionnaire analysis (T1: mean value (M) = 52.731; 95% CI (KI95%): 49.791-55.671; T3: M = 55.862; KI95%: 55.038-56.685;  $p = 0.019$ ). That being said, there was no significant change in the SF-12's mental cumulative score ( $p = 0.674$ ).

**Sharifipour F. et al. (2024).** Curcumin's effect on dysmenorrhea and premenstrual syndrome symptoms. From 2015 to 2021, 379 volunteers with an average age of  $23.33 \pm 5.54$  years were recruited for the research. Results: The meta-analysis found that curcumin might substantially reduce the severity of dysmenorrhea (mean difference, -1.25; 95% CI, -1.52 to -0.98; three trials;  $I^2=31\%$ ) and the overall score of PMS (standardized mean difference, -1.41; 95% CI, -1.81 to -1.02).

**Amir T. et al. (2023).** Curcumin's effect on inflammatory biomarkers and iron profile in premenstrual disorders and dysmenorrhea patients: a randomized controlled experiment. This triple-blind, placebo-controlled clinical trial had 76 patients as a sample. Participants were randomly allocated to either the curcumin ( $n = 38$ ) or control ( $n = 38$ ) groups. Each individual took one capsule (500 mg of curcuminoid+piperine or placebo) every day for three consecutive menstrual cycles, beginning seven days before and ending three days after menstruation. Ferritin, serum iron, total iron-binding capacity (TIBC), neutrophils, white blood

cells, neutrophils, platelet counts, mean platelet volume (MPV), red blood cell distribution width (RDW), and high-sensitivity C-reactive protein (hsCRP) were all examined. Furthermore, the RDW:platelet ratio (RPR), platelet:lymphocyte ratio (PLR), and neutrophil:lymphocyte ratio (NLR) were calculated. While there was no change in neutrophil, RDW, MPV, NLR, PLR, and RPR values ( $p > 0.05$ ), curcumin significantly reduced hsCRP serum levels [from 0.30 mg/L (0.0-1.10) to 0.20 mg/L (0.0-1.3);  $p = 0.041$ ] when compared with placebo. The curcumin group saw no statistically significant changes in iron metabolism indicators during the study, and the therapy was well tolerated ( $p > 0.05$ ). Curcumin therapy to healthy women with PMS and dysmenorrhea may enhance serum hsCRP, an indication of inflammation, while leaving iron homeostasis alone.

**Khadijeh et al. (2023).** Curcumin's impact on nitric oxide levels in women with dysmenorrhea and premenstrual syndrome: a randomized controlled trial. Curcuminoid supplementation substantially lowered blood NOx levels from  $93.3 \pm 37.4$  to  $85.9 \pm 28.9$  ( $P = 0.048$ ), but the placebo group exhibited no significant reduction ( $72.4 \pm 42.5$  to  $68.4 \pm 32.9$ ;  $P = 0.32$ ). However, NOx levels did not differ significantly across the groups ( $P = 0.36$ ). Importantly, in the curcumin group, there was a significant association between PMS discomfort and NOx levels (Pearson's  $r = 0.34$ ;  $P = 0.042$ ), suggesting that greater NOx levels may be associated with increased PMS pain.

**Malik M. et al. (2009).** The study evaluated the effect of curcumin exposure on human immortalized leiomyoma and myometrial cell lines using proliferation assays at doses ranging from 5 to 40  $\mu$ M. Curcumin therapy reduced leiomyoma cell concentrations significantly at dosages as low as 5  $\mu$ M. However, concentrations over 20  $\mu$ M resulted in decreased cell concentrations for both cell lines. Curcumin inhibited the proliferation of uterine leiomyoma cells via modulating the apoptotic pathway and blocking the production of fibronectin, an ECM component. Curcumin presents a novel strategy to treating leiomyoma.

**Kenji T. et al. (2011).** Curcumin inhibits the growth of uterine leiomyoma cells. EKT-3 cells, uterine leiomyoma cell lines derived from Eker rats, were used. The MTS test and cell count were used to determine cell proliferation. The luciferase assay was used to evaluate the activation of PPAR $\gamma$ . Findings: We observed that curcumin significantly inhibited the development of ELT-3 cells. Curcumin was shown to be a ligand for PPAR $\gamma$ , which is expressed in ELT-3 cells. Curcumin's inhibitory action decreased when cells were treated with a PPAR $\gamma$  antagonist. Finally, in vitro experiments show that curcumin reduces ELT-3 cell growth by activating PPAR $\gamma$ . Curcumin may be another therapy option for uterine leiomyoma.

#### IV. SCOPE FOR THE FUTURE

The necessity for safe and efficient treatment alternatives is underscored by the frequency of uterine fibroids, which are benign tumour that can cause severe symptoms and negatively affect quality of life. According to recent research, natural treatments like green tea and turmeric may have therapeutic effects because of their antioxidant and anti-inflammatory properties.

#### V. DIRECTIONS FOR RESEARCH

- **Clinical trial:** In order to study the effectiveness of Green tea and turmeric on lowering fibroid size, symptoms in comparison to conventional treatments, conduct randomized controlled trials. Investigate various green tea and turmeric blends and dosages to create the best possible treatment plans.
- **Mechanistic Studies:** Examine the molecular processes via which green tea (epigallocatechin gallate, or EGCG) and turmeric (curcumin) impact fibroid biology. Examine how these substances affect uterine fibroid tissue's inflammatory processes, apoptosis, and cell proliferation.
- In order to improve treatment results, consider the possible synergistic effects of combining green tea and turmeric with traditional medicines. Examine the effects of supplementing with green tea and turmeric as well as lifestyle factors including food and activity.
- **Safety and Tolerance:** - Evaluate the safety profile of green tea and turmeric, especially on patients who are taking other medications or have pre-existing illnesses.
- Investigate the tolerance levels of different populations while taking age, sex, and metabolic variations into account.

#### VI. CONCLUSION

Research on the efficacy of green tea and turmeric in the treatment of uterine fibroids has produced encouraging findings about their possible medical advantages. Turmeric contains the active component curcumin, whereas green tea contains epigallocatechin gallate (EGCG) has anti-inflammatory and antioxidant effects, which may help reduce fibroid symptoms and size.

##### ➤ *Key Findings from the Research Indicate that:*

- **Symptom Management:** Regular use of turmeric green tea reduced symptoms of uterine fibroids, including pelvic discomfort and heavy monthly flow, according to participants.
- **Fibroid Size Reduction:** Curcumin and EGCG's anti-inflammatory actions may prevent fibroid growth and reduce their size over time.
- **Safety Profile:** Turmeric and green tea were well-tolerated by individuals with little side effects, indicating their potential as safe alternatives to conventional therapies.



- **Lifestyle Integration:** According to the study, adding turmeric green tea to a well-balanced diet may provide a comprehensive strategy for treating uterine fibroids while also enhancing general health and wellbeing.

In conclusion, preliminary results lend credence to the idea that turmeric green tea might be a useful natural treatment for uterine fibroids, even if more thorough and regulated clinical research are required to completely validate these findings. Continued study in this area might lead to more effective and safer treatment alternatives, eventually enhancing the quality of life for many women. In order to further demonstrate the function of these natural chemicals in uterine health, more research should be done to examine their mechanisms of action and long-term consequences.

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