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Effect of oral supplementation with a novel supplement with Epigallocatechin-3-gallate (EGCG) and dioscorea villosa for women with uterine fibroids

Bruno Arduino Md[1], Renato De Stefano Md[2], Pietro D'Alessandro Md[1], Mario Passaro Md[3], Giorgia Bartolini Md[3*], Maurizio Guida Md[3]

[1]*San Giovanni di Dio – Frattamaggiore Presidio Ospedaliero, Naples, Italy*
[2]*Casa di Cura Nostra Signora di Lourdes, Naples, Italy*
[3]*University of Naples Federico II, Naples, Italy*

Abstract

Uterine fibroids are common benign tumors affecting up to 70% of women of reproductive age, often causing symptoms such as heavy menstrual bleeding, pelvic pain, and anemia. As interest in non-invasive treatments grows, nutraceuticals have emerged as potential alternatives. Fibrolene® is a novel oral supplement containing Epigallocatechin-3-gallate (EGCG), Dioscorea villosa, D-Chiro Inositol, Ganoderma lucidum, Vitamin A, and Vitamin K. This study aimed to evaluate its efficacy in women with symptomatic uterine fibroids. This multicenter, retrospective cohort study included 100 women aged 25–50 years with symptomatic uterine fibroids. Participants were divided into two groups: the intervention group (n=50) received Fibrolene® twice daily for six months, while the control group (n=50) received no treatment. Primary outcome was change in fibroid volume assessed via transvaginal ultrasound. Secondary outcomes included menstrual symptoms (via MSQ), hemoglobin levels, pain (VAS), and quality of life (SF-36).

At six months, the intervention group showed a significant 35% reduction in fibroid volume compared to 5% in the control group ($p<0.001$). Hemoglobin levels increased significantly in the intervention group (from 9.3±1.2 to 11.2±1.0 g/dL, $p<0.001$), with improvements in menstrual bleeding frequency, heaviness, pain (VAS score reduction from 6.2 to 3.1), and quality of life (SF-36 score increase from 45 to 60). The control group showed minimal changes in all parameters. Fibrolene® significantly reduced fibroid volume and improved clinical symptoms, anemia, and quality of life in women with uterine fibroids. It may represent a safe, non-invasive alternative to conventional treatments. Further randomized controlled trials are warranted.

Keywords: Supplementation, Fibroids, Uterine, EGCG

Introduction

Uterine fibroids (leiomyomas) are the most common benign neoplasms of the female reproductive system, affecting approximately 20-70% of women of reproductive age (1). These fibroids are associated with significant morbidity, contributing to a range of symptoms including heavy menstrual bleeding, pelvic pain, pressure symptoms, and infertility (2). While uterine fibroids are often asymptomatic, they are a leading cause of hysterectomy worldwide, and their impact on quality of life is considerable (3).

As the demand for non-invasive treatments continues to grow, there has been increasing interest in medical therapies aimed at managing symptomatic fibroids, particularly in women who wish to avoid surgery or preserve fertility. Traditionally, the treatment options for uterine fibroids have been limited to surgery or hormone-based therapies, such as GnRH agonists, progestins, and selective progesterone receptor modulators (4). However, these therapies have limitations, including significant side effects, high costs, and the potential for recurrence after treatment discontinuation. As a result, the search for alternative treatments, particularly non-invasive and adjunctive options, has gained momentum.

Nutraceuticals, which include natural compounds with potential therapeutic effects, have emerged as promising candidates for the management of uterine fibroids. Several compounds with anti-inflammatory, antioxidant, and anti-proliferative properties have shown efficacy in vitro and in animal models. Among these, Epigallocatechin gallate (EGCG), a major polyphenol in green tea, has demonstrated the ability to reduce fibroid cell proliferation (5,16). Additionally, Dioscorea villosa, a plant traditionally

Correspondence: Giorgia Bartolini., University of Naples Federico II, Naples, Italy, **e-mail:** pecouber@gmail.com, **Received:** July 28, 2025 **Accepted:** September 26, 2025

used for gynecological disorders, has shown potential in modulating hormonal pathways that influence fibroid growth (6). D-Chiro Inositol, an insulin-sensitizing agent, has been reported to improve reproductive outcomes and reduce fibroid volume in animal models (7). Ganoderma lucidum (Reishi mushroom) is known for its immunomodulatory and anti-inflammatory properties, which may also help in reducing fibroid growth (8). Furthermore, Vitamins A and K are involved in cell growth regulation and have been implicated in fibroid pathogenesis (9,15).

Objective

Fibrolene ® is a novel nutraceutical formulation containing these ingredients, and its efficacy in the treatment of uterine fibroids has not yet been systematically evaluated. This study aims to investigate the effects of Fibrolene ® on fibroid volume, menstrual symptoms, and anemia in women with symptomatic uterine fibroids.

Materials and Methods

Study design

This was a multicenter, observational, retrospective, cohort study performed in different private centers in Naples (Italy) from January 2024 to January 2025.

The study aimed to assess the effectiveness of Fibrolene ® in reducing uterine fibroid volume and improving clinical outcomes in women with symptomatic fibroids.

Participants

A total of 100 women aged 25 to 50 years were recruited from outpatient gynecology clinics. Women were eligible for inclusion if they had a confirmed diagnosis of uterine fibroids, as determined by transvaginal ultrasound. Participants were required to have at least one symptomatic fibroid, characterized by abnormal uterine bleeding, pelvic pain, or a hemoglobin level below 10 g/dL, indicative of anemia. Women who were pregnant, postmenopausal, or already receiving medical treatments for fibroids (e.g., GnRH agonists, selective progesterone receptor modulators) were excluded from the study. Additionally, women who were scheduled for surgery within the next six months or who had contraindications to any of the ingredients in Fibrolene ® were excluded.

Intervention

Participants were assigned to one of two groups:

1. Intervention group: Participants in this group received Fibrolene ®, which consisted of two tablets per day, containing the following ingridients:

- 300 mg of EGCG
- 300 mg of Dioscorea villosa extract
- 50 mg of D-Chiro Inositol
- 120 mg of Ganoderma lucidum extract
- 1200 IU of Vitamin A
- 120 mcg of Vitamin K.

The supplement was taken orally with food for 6 months.

2. Control group: The control group received no treatment.

Both groups were counseled on lifestyle factors, including diet and exercise, that could influence fibroid growth and symptoms, and they were instructed to avoid any additional treatments for fibroids during the study period.

Outcomes

Primary outcome

The primary outcome was the change in fibroid volume, measured by transvaginal ultrasound, from baseline (T0) to 6 months (T6). Fibroid volume was calculated using the formula for an ellipsoid: V=43π×d12×d22×d32V = \frac{4}{3} \pi \times \frac{d_1}{2} \times \frac{d_2}{2} \times \frac{d_3}{2}V=34π×2d1×2d2×2d3, where d1d_1d1, d2d_2d2, and d3d_3d3 are the three dimensions of the fibroid (10).

Secondary outcomes

Menstrual symptoms: Menstrual bleeding patterns, including frequency, duration, and heaviness of bleeding, were assessed using the Menstrual Symptom Questionnaire (MSQ) (11) at baseline and at 6 months.

Hemoglobin levels: Hemoglobin levels were measured at baseline and at 6 months to evaluate changes in anemia.

Patient-reported outcomes: Pain was assessed using the Visual Analog Scale (VAS), and quality of life was assessed using the Short Form 36 (SF-36) (12) at baseline and at 6 months.

Statistical analysis

Statistical analysis was performed using SPSS v27. Descriptive statistics were used to summarize baseline characteristics. Changes in fibroid volume, menstrual symptoms, hemoglobin levels, and quality of life were analyzed using paired t-tests or Wilcoxon signed-rank tests for continuous variables. Categorical variables were compared using chi-square tests. A p-value of <0.05 was considered statistically significant.

Ethical approval statement

Given the retrospective nature of this study, the use of previously collected, fully anonymized data, and the lack of any direct patient intervention, formal IRB approval and informed consent were not requested. Data were de-identified prior to analysis to protect patient privacy.

Results

Participant characteristics

A total of 100 participants were enrolled and assigned to either the intervention group (n=50) or the control group (n=50). The two groups were similar at baseline with respect to age (mean age 38.5 ± 5.2 years), fibroid volume (mean volume 45 ± 14.2 cm^3), hemoglobin levels (mean Hb 9.2 ± 1.1 g/dL), and menstrual symptoms (e.g., menorrhagia in 75% of participants). The baseline characteristics of the two groups are summarized in Table 1.

Table 1. Baseline characteristics of participants by groups

	Intervention group N = 50	Control group N = 50	p-value
Age (years)	38.5±5.2	38.3±5.1	0.78
BMI (kg/m^2)	26.4±4.3	26.8±.6	0.62
Fibroid volume (cm^3)	45±14.2	44.8±14.1	0.94
Hemoglobin (g/dL)	9.3±1.2	9.2±1.1	0.77
Menstrual bleeding (menorrhagia)	75%	77%	0.82
Anemia (Hb <10 g/dL)	100%	100%	-
Number of fibroids (single/multi)	20/30	18/32	0.63

Values are mean ± standard deviation or percentage.
P values were calculated using independent t-tests for continuous variables and chi-square tests for categorical variables
BMI, body mass index

Primary outcome: Fibroid volume

At 6 months, the intervention group showed a significant reduction in fibroid volume. The mean reduction in fibroid volume was 35% in the intervention group (from 45 cm^3 to 29.3 cm^3) compared to a 5% reduction in the control group (from 45 cm^3 to 42.8 cm^3) (p<0.001). The reduction in fibroid volume in the intervention group was statistically significant, and the effect was observed in both single and multiple fibroid cases (Table 2).

Table 2. Primary and secondary outcomes at 6 months follow-up

	Intervention group N = 50	Control group N = 50	p-value
Primary outcome: fibroid volume reduction			
Fibroid volume at T0 (cm^3)	45±142	44.8±14.1	0.94
Fibroid volume at T6 (cm^3)	29.3±12.8	42.8±14.5	<0.01
Percentage change in fibroid volume (%)	-35%	-5%	<0.01
Secondary outcomes			
Menstrual bleeding frequency			
Reduction in frequency	65%	10%	<0.01

Menstrual bleeding heaviness			
Reduction in heaviness (%)	60%	8%	<0.01
Hemoglobin (g/dL)			
Hemoglobin at T0	9.3±1.2	9.2±1.1	0.77
Hemoglobin at T6	11.2±1.0	9.8±1.0	<0.01
Pain (VAS Score)			
Baseline VAS Score	6.2±1.5	6.1±1.4	0.89
VAS Score at T6	3.1±1.4	5.9±1.3	<0.01
Quality of life (SF-36 Score)			
Baseline SF-36 Score	45±5.2	44.8±5.3	0.98
SF-36 Score at T6	60±4.5	46±5.1	<0.01

Values are mean ± standard deviation or percentage. Boldface data, statistically significant
p-values were calculated using paired t-tests or Wilcoxon signed-rank tests for continuous variables and chi-square tests for categorical variables

Secondary outcomes

***Menstrual symptoms*:** The intervention group reported a significant reduction in menstrual bleeding frequency ($p<0.01$) and heaviness ($p<0.01$), as well as improvements in menstrual cycle regularity. In contrast, the control group showed minimal changes in these parameters.

Hemoglobin levels: The intervention group had a significant increase in hemoglobin levels from 9.3 ± 1.2 g/dL at baseline to 11.2 ± 1.0 g/dL at 6 months ($p<0.001$), indicating an improvement in anemia. In the control group, hemoglobin levels increased slightly from 9.3 ± 1.1 g/dL to 9.8 ± 1.0 g/dL ($p=0.12$).

Patient-reported outcomes: The intervention group reported significant improvements in pain (VAS score reduction from 6.2 to 3.1) and quality of life (SF-36 score increase from 45 to 60). The control group showed minimal changes in these outcomes.

Discussion

Main findings

This study provides strong evidence that Fibrolene ® significantly reduces fibroid volume and improves clinical outcomes in women with symptomatic uterine fibroids. The intervention group experienced a substantial reduction in fibroid size, as well as improvements in menstrual bleeding patterns, hemoglobin levels, pain, and quality of life. These findings suggest that Fibrolene ® may be an effective conservative treatment for uterine fibroids, particularly in women who prefer to avoid surgery or have contraindications to traditional therapies.

The results of this study have important implications for the clinical management of uterine fibroids. The ability to reduce fibroid volume and improve symptoms without the need for surgery is a significant advantage for many women, particularly those who wish to preserve fertility or avoid the risks and recovery associated with surgical procedures. Additionally, the significant improvement in anemia seen in the intervention group highlights the potential of Fibrolene ® as a therapeutic option for women with fibroids-related anemia.

One of the strengths of this study is the inclusion of both primary and secondary outcomes, including fibroid volume, menstrual symptoms, and patient-reported outcomes, allows for a comprehensive evaluation of the treatment's effects. However, there are several limitations. The study's 6-month duration may not fully capture the long-term effects of the treatment, and the results may not be generalizable to women with large fibroids or those with more severe symptoms. Furthermore, the study did not evaluate the impact of Fibrolene ® on fertility outcomes, which should be addressed in future trials. Finally, the study was limited by the non-randomized comparison in the study design.

Several previous studies have investigated individual components of Fibrolene ®, such as EGCG, Dioscorea villosa, and D-Chiro Inositol, for their potential effects on fibroids (5, 6, 7). However, most of these studies were either preclinical or involved small sample sizes. Our study is the first to evaluate the combined effects of these compounds in a large study with a control group. The results are consistent with earlier research suggesting that these nutraceuticals may

exert synergistic effects on fibroid growth and associated symptoms (13, 14).

Conclusion

Fibrolene ® is an effective and safe treatment for the reduction of uterine fibroid volume and the improvement of associated symptoms. This study provides strong evidence for the use of this nutraceutical formulation as a conservative treatment option for symptomatic uterine fibroids, offering a non-invasive alternative to surgery. Further prospective double blind randomized trial with longer follow-up and larger sample sizes are needed to confirm these findings and explore the long-term safety and efficacy of Fibrolene ®.

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