

Green Tea for Uterine Fibroid

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Abstract

Uterine fibroids are major burden on women's reproductive health. Currently, there is no effective long-term medicinal treatment for this common debilitating disease. Hysterectomy is a radical option creates a major dilemma for women with symptomatic UFs who have not completed their families. Tea is most common beverages used worldwide. Recently green tea extract has been found to be efficacious in reducing size of fibroids. Green tea is a natural product, commonly used by women for multiple purposes. Epigallocatechin gallate (EGCG), the major catechin in green tea, exhibits several useful biological effects, including anti-inflammatory, antiproliferative, and antioxidant effects. The short review briefly summarizes the role and potential of this natural occurring alternative therapy which could be a boon in developing country like India affording cost effective and safe alternative.

Keywords: green tea; epigallocatechin gallate; uterine fibroid

Uterine leiomyoma is major health issue for women as they affect the quality of life. Every gynecologist will agree that it is a dilemma one faces each day related to counseling of patients for uterine fibroid treatment as majority of them asymptomatic and those that are symptomatic presenting with abnormal bleeding, pain and occasional infertility need medical or surgical treatment with medical options not fully backed by scientific research¹. It becomes all the more difficult in deciding the treatment plan if the woman is desirous of child birth or want to preserve fertility. The fibroids can be subserosal, intramural and intramucosal with the intramucosal presenting with symptoms.

The current management options span from expectant observation to surgical options like hysterectomy, myomectomy uterine artery embolization and image guided focused ultrasound thermal therapy². The offering of surgical options in asymptomatic individuals is treacherous and brings into limelight

medical alternatives that unfortunately not approved like in other diseases where they are mainstay of treatment. The literature studies have elaborated on the use of depot medroxy progesterone acetate (DMPA) (Lumbiganon et al³ and Venkatachalam et al⁴), progestin releasing intrauterine system (LNG-IUS) (Sayed et al⁵), combined oral contraceptive pills (Qin et al⁶), 25 (OH) vitamin D (Sabry et al and Haider et al⁷). We briefly summarize the role of green tea extract –Epigallocatechin gallate (EGCG) as a potential treatment option for uterine fibroids based on available literature studies⁸⁻¹⁰.

What is green tea

Green tea is a type of tea made from *Camellia Sinensis* leaves and buds that are not subjected to withering and oxidation process that is routinely used to make Oolong teas and black teas. The origin of green tea is from China. The constituents of green tea are shown in table-1.

Table -1 Green tea constituents⁹

Polyphenols
Epigallocatechin gallate (EGCG)
Epicatechin gallate
Epicatechins
Flavanols
Flavonoids
Kalmpterol
Quercetin
Myricetin

Green tea health benefits

The flavonoids have no biological proven role in human body. EGCG has been of major interest of various scientific researches. The health benefits of green tea consumption are highly debatable and controversial. The scientific panel in 2011 under European commission [11] rejected any claims of health benefit from green tea although it was accepted that green tea enhances mental alertness due to caffeine content. The other health effects lacked backing from scientific data.

In a review from Cochrane collaboration¹² in 2020, side effects of green tea like gastrointestinal disorders, deranged liver enzymes, raised blood pressure; skin reactions and insomnia were mentioned. Green tea has taken the beverage market by surprise as it is easy to prepare, devoid of milk, instant preparation particularly at work place and taste.

Green tea & fibroids

Oral EGCG consumption was used in a randomized control trial by Chow et al [13] who in their study used it in doses of 400,800 or 1200 mg per day and reported mild nausea as the side effect in 3% of the test subjects. The study emphasized on safety profile of EGCG. In another study by Luo et al [14] it was found that there was decrease in oxidative biomarkers by green tea use. There are two landmark studies in literature by Roshdy et al [15] and Zhang et al [16]. Which have reported statistically significant reduction in the size of uterine fibroids verses placebo.

Roshdy et al 15 recruited 39 subjects aged 18-50 years with day 3 follicular stimulating hormone <10mIU/ml having symptomatic uterine fibroids. The subjects had at least one fibroid greater than 2 cm or larger, confirmed by transvaginal sonography. The subjects were randomized and given 800 mg of green tea extract or placebo of 800mg of brown rice for 4 months. The uterine fibroid size at the end of study period by transvaginal sonography decreased to an average 32.6% in the group receiving EGCG in comparison to placebo group. The symptom severity score (SS) in ECGC group was lower than placebo group. In addition, there was significant reduction in blood loss and improved hemoglobin levels in the EGCG group.

In absence of FDA approved medical treatment for fibroids the search for effective treatment goes on. The currently used hormonal treatments are met with adverse effects like loss of bone density, endometrial hyperplasia and dysplasia [17, 18].

The reduced size of fibroid may be attributed to inhibitory effect on proliferating leiomyoma tumor cells and apoptosis [16].

In terms of safety there are literature studies by Shen et al 19, Matsuyama et al 20, Pisters et al 21 and others 22 where green tea extract was well tolerated with no hepatotoxicity. It was caffeine that was dose limiting factor and eliminating caffeine in green tea could ameliorate many of the side effects²³.

Green tea could be effective alternative with potential therapeutic role for uterine fibroid management although there are limited studies in literature till date but it is an opportunity for researchers in India and South Asia having strong alternative medicine backbone to conduct studies and trials for more scientific backing. Green tea could serve as a game changer if the trials prove its clinical efficacy with its role as an antioxidant been slowly recognized it is quite possible that it is used as medical treatment in near future for fibroids.

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