

Comparison of the Effect of Ginger and Zinc Sulfate on Primary Dysmenorrhea: A Placebo-Controlled Randomized Trial

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■ ABSTRACT:

Primary dysmenorrhea is common among young women and results in their incapacitation; it can be accompanied by various symptoms that can disrupt their lives. The aim of this randomized trial was to compare the effect of ginger, zinc sulfate, and placebo on the severity of primary dysmenorrhea in young women. One hundred and fifty high school students were recruited. The participants were divided into three groups. The first group received ginger capsules, the second group received zinc sulfate capsules, and the third group received placebo capsules. All participants took the medications for four days, from the day before the commencement of menstruation to the third day of their menstrual bleeding. The severity of dysmenorrhea was assessed every 24 hours by the pain visual analog scale. The severity of pain was significantly different between, before, and after the intervention in both the ginger and the zinc sulfate groups ($p < .001$). Compared with the placebo receiving group, participants receiving ginger and zinc sulfate reported more alleviation of pain during the intervention ($p < .05$). Ginger and zinc sulfate had similar positive effects on the improvement of primary dysmenorrheal pain in young women.

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INTRODUCTION

Primary dysmenorrhea is a condition in which there is pain during menstruation with no detectable organic disease or other medical condition. It has been reported to be a common health problem in young women, with a prevalence

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of 30% to 90% (Eryilmaz, Ozdemir, & Pasinlioglu, 2010; Jang, Kim, Lee, Jeong, & Chung, 2013; Kim, Park, Lee, & Chung, 2011). It has been reported to be severe in 10% of young women, resulting in their incapacitation for the first 3-4 days of their menstrual cycle. Menstrual pain may be accompanied by various symptoms that can disrupt the life of women at school, work, and home, and interfere with their social interactions, resulting in isolation (Ortiz, Rangel-Flores, Carrillo-Alarcón, & Veras-Godoy, 2009).

One of the most likely factors causing primary dysmenorrhea has been reported to be an increase in the production of uterine prostaglandins (Rosenwaks & Seegar-Jones, 1980). Research has shown that the inhibition of prostaglandin synthesis can ameliorate the severity of menstrual pain in women. Thus, current treatments for women suffering from primary dysmenorrhea are nonsteroidal anti-inflammatory drugs (NSAIDs), hormonal contraceptive, antipyretic medication, and analgesic medication (Daniels, Torri, & Desjardins, 2005). However, these medications have been reported to have a failure rate of 20% to 25% (Daniels et al., 2005; Edwards, Moore, & Mcquay, 2004; Zhu, Proctor, Bensoussan, Smith, & Wu, 2007), as well as to be associated with various unwanted outcomes, such as diarrhea, stomachache, and nausea (Harel, 2012).

Considering the contraindications of chemical medications and their unwanted side effects, there has been an increase in the use of alternative treatments among women (Abdali, Khajehei, & Tabatabaee, 2010; Abdul-Razzak, Ayoub, Abu-Taleb, & Obeidat, 2010; Kotani et al., 1997).

Because "herbs and spices are generally considered safe and proved to be effective against various human ailments" (Ajith, Hema, & Aswathy, 2007, p 2268), many health problems have been treated by plant extracts, which have attracted attention in different fields of medical science in the past decade (Penna et al., 2003).

Ginger is one of the herbal supplements that has been used for medical purposes since antiquity and is known as a popular herbal medication to treat painful diseases (Kizhakkayil & Sasikumar, 2011). In particular, it is an important herb in traditional Chinese and Asian-Indian medicine (Yip & Tam, 2008). A study by Gardiner, Whelan, White, Filippelli, Bharmal and Kaptchuk (2013) has shown that ethnic background of people may affect the use of herbal supplements, as the prevalence of herb use is reported to be higher among Asians (30%) and Hispanics (30%) than African Americans (17 %).

The Food and Drug Administration (FDA) of the United States has classified ginger as a "generally

recognized as safe" herb (Srivastava & Mustafa, 1992). Also, research has reported that there are anti-inflammatory effects of ginger in rodents (Vendruscolo et al., 2006). In addition, a recent study by Rahnama, Montazeri, Huseini, Kianbakht, and Naseri (2012) has shown the efficacy of ginger in decreasing the intensity and duration of primary dysmenorrheal pain.

The anti-inflammatory effect of ginger has been reported to result from its efficacy in the inhibition of cyclooxygenase and 5-lipoxygenase, followed by the reduction of leukotriene and prostaglandin synthesis (van Breemen, Tao, & Li, 2011). However, its effect on inflammation and pain in humans still needs more in-depth investigation.

Other dietary supplements that are generally used to promote health and well-being are minerals (Khajehei, Abdali, Parsanezhad, & Tabatabaee, 2009; Khajehei, Abdali, & Tabatabaee, 2010). A recent research (Bailey, Gahche, Miller, Thomas, & Dwyer, 2013) has reported that the main motivations that U.S. adults use supplements are to improve (45%) and maintain (33%) overall health. The most frequently used type of supplement was reported to be multivitamin-mineral products.

Zinc is a mineral that has been reported to have anti-inflammatory effects and is a strong antioxidant (Lang et al., 2007; Prasad, 2008). Research has shown that zinc deficiency may cause pain in patients, with burning mouth syndrome, and that administration of zinc replacement therapy can decrease the mean numerical pain scale in these patients (Cho et al., 2010).

It has been suggested that zinc can prevent menstrual cramps and alleviate dysmenorrhea. The exact mechanism of action of zinc in menstrual pain relief is still unknown. However, it has been suggested that zinc may have antioxidant and anti-inflammatory effects on the uterus, as it reduces the production of prostaglandins resulting in the amelioration of menstrual pain. Also, research has suggested that zinc may help improve the micro-vessel circulation, resulting in less uterine cramp and pain during menstrual days (Eby, 2007).

Menstrual pain imposes disabling effects on young women and can decrease their quality of life; thus, it is important to explore the most appropriate methods of treatment of this problem to promote quality of life. Because the common chemical medications used to treat this problem have moderate to severe side effects, an investigation of alternative treatments with high efficacy and minimal unwanted effects is warranted. The present clinical trial was conducted to address the issue. The purpose of this

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