

Green Coffee Beans as a Weight Loss Supplement

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Abstract: *More than one third of the United States is considered obese, according to the Centres for Disease Control. [1] Obesity is known to contribute to comorbid conditions such as diabetes, hypertension, dyslipidaemia, respiratory problems, and many other diseases, all of which may become life threatening. Patients are classified as obese if their body mass index is greater than or equal to 30 kg/m² and overweight if their body mass index is between 25 and 29.9 kg/m²[2] Since 1960, there has been a dramatic increase in the portion of the population classified as overweight or obese [3] Evidence is accumulating from animal studies regarding the use of GCE as a weight loss supplement [3, 4]. In human subjects, coffee intake has been reported to be inversely associated with weight gain [5]. Consumption of coffee has also been shown to produce changes in several glycaemic markers in older adults [6]. Similarly, different analysis has indicated that the consumption of caffeinated coffee cause some reductions in long-run weight gain, an effect which is likely to be due to the known thermogenic effects of caffeine intake as well as effects of GCE and other pharmacologically active substances present in coffee [7]. GCE has also been postulated to modify hormone secretion and glucose tolerance in humans [8]. This effect is accomplished by facilitating the absorption of glucose from the distal, rather than the proximal part of the gastrointestinal tract.*

The objective of this paper is to analyse the results of human clinical trials assessing the effectivity of GCE as a weight-reducing agent.

Key Words: *Obesity, weight loss, green coffee extract, chlorogenic acid.*

Introduction:

Obesity has been increasing rapidly in recent years and now has become a public health problem in the world [9]. Obesity is defined as excess accumulation of body fat and is known as a low-grade inflammation condition [10]. Obesity, not only affect the body image and self-esteem but also it is associated with increased risk for numerous chronic diseases, including hypertension, insulin resistance, type 2 diabetes and cardiovascular disease [11,12]. Therefore, it is important to find a safe and effective way to manage body weight especially in obese patients. Weight management is a long-standing goal of achieving a healthy life that is including healthy eating and physical activity to maintain a balance between intake and energy consumption [9]. However, several strategies have been used to treat obesity and its related complications. Behavioural therapy, surgery and drug therapy are the most usual treatment of obesity [13]. Since human diets contain many alternative components that will act synergistically to inhibit or promote overweight and fat, studying the components of the diet may be an informative strategy to assess their efficacy and underlying mechanisms [11].

Recently, problems with the high prices and potential adverse effects of most weight loss medication have led obese patients to try nutraceuticals that may cause weight loss [14,15]. Coffee is one of the most commonly consumed beverages in the world that its beneficial effects on human health have been a subject of many studies [16-20]. One of the common ancient style of low forms of coffee is green coffee extract (GCE) that

prepared from green or raw (unroasted) coffee bean. It is also present in roasted coffee, but much of the GCE is destroyed during the roasting process [21]. GCE has been introduced as the richest sources of chlorogenic acid [21-25] and most of weight losing effects of GCE has proposed to be related to its chlorogenic acid content [25]. Chlorogenic acid (CGA) could be a natural matter that is the organic compound of caffeic acid and quinic acid. It is an important biosynthetic intermediate [21]. Chlorogenic acid is very important intermediate in polymer biosynthesis. This compound, known as an antioxidant, may also slow the release of glucose into the bloodstream after a meal [25]. Isomers of chlorogenic acid are found in potatoes [26] and chlorogenic acid is the most abundant phenolic acid in the flesh of eggplant fruits [27]. It is also found in prunes [28] but the richest source of chlorogenic acid is green coffee bean extract. Therefore, the target of this paper was to review the results of the studies assessing the effectivity of GCE as a weight loss supplement.

Methods:

Electronic searches of the literature were conducted for the subsequent databases: MEDLINE, EMBASE, CINAHL, AMED, and also the Cochrane Library. Each information was searched from beginning up till Apr, 2010. Search terms used enclosed occasional, inexperienced occasional, inexperienced occasional extract, roasted coffee, decaffeinated coffee, chlorogenic acid, caffeoylquinic acid, antiobesity agent, appetite suppressant, abdominal fat, BMI, body mass index, body fat, body weight, overweight, overweight, weight loss,

weight decrease, weight watch, weight cycle, weight control, weight gain, weight maintenance, weight reduction, weight change, dietary supplement, food supplement, nutraceutical, nutri*supplement, over-the-counter OR OTC, non-prescription drugs, randomised controlled trial, clinical trial, and placebo. We additionally searched different web databases for relevant conference proceedings, in addition as our own files. Hand searches of the listing of retrieved full texts were additionally conducted.

Due to the wide availability of products containing green coffee and increasing popularity due to media exposure, it is expected that pharmacists and other health care professionals will encounter patient questions regarding these products. The objective of this review was to determine if clinical data support the use of green coffee for the purpose of weight loss.

Discussion:

Studies have shown that green coffee enhances energy metabolism and reduces lipogenesis by down regulating SREBP-1c (Sterol regulatory element-binding protein) and related molecules, which leads to the suppression of body fat accumulation [30]. Scientific theories expressed that natural substances found in inexperienced occasional forestall weight gain and fat accumulation by inhibiting fat absorption and increasing metastasis in liver [31, 33]. Supplementation with coffee polyphenols can also be effective in weight loss and reduce abdominal and liver fat accumulation by inhibition of macrophages infiltration into adipose tissues [30].

The inhibition of glucose-6-phosphatase (Glc-6-P) chemical reaction in intact human liver microsomes by decaffeinated inexperienced occasional extract was additionally shown in vitro study. Glc-6-P exists primarily within the liver and catalyses the tip step in gluconeogenesis and glycogenolysis. The inhibition of this enzyme by green coffee may contribute to its antidiabetic and weight loss effects by reducing hepatic glucose production [34].

It seems that the beneficial effects of green coffee in relation to weight loss attributed to its chlorogenic acid content [32,33]. Chlorogenic acids have high bioavailability in humans [34,35]. Because of the synergistic effect between caffeine and chlorogenic acid in green coffee extract, green coffee extract was shown to suppress body weight gain better than chlorogenic acid or caffeine alone [36,37].

As mentioned on top of, animal studies on the effectiveness of green coffee as a weight loss supplement have provided conflicting results.

In human studies, the effect of green coffee has also been studied without maintaining of diet and physical activity.

Moreover, none of the studies have determined the result of inexperienced occasional body composition changes, muscle mass maintenance, body fluid adipocytokins levels and obesity- related metabolic parameters. Therefore, future investigations with assessing of style changes like physical activity levels and dietary intake area unit needed during this field.

Conclusion:

Therefore, additional rigorous trials area unit required to assess the utility of inexperienced occasional extract as a weight loss tool. Especially, per the result of inexperienced occasional on increasing energy metabolism and reducing lipogenesis, it is recommended that studies be conducted on patients with BMI more than 40. Moreover, it's imperative that future studies of inexperienced occasional and health account for individual variations within the physiological response to natural elements gift in inexperienced occasional.

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