JHE JOURNAL OF HOME ECONOMICS, MENOUFIA UNIVERSITY
Website: https://mkas.journals.ekb.eg
Print ISSN 2735-5934 Online ISSN 2735-590X

Nutrition and Food Sciences
Article Type: Original article

Received: 12 Aug 2024
Accepted: 12 Oct 2024
Published: 1 Jan 2025

The Effect of Garcinia (*Garcinia cambogia*) and Green Coffee on Obese Rats

Laila Albedewy, Mohamed Elsayed, Eman Atia*, Wafaa Refaat

Department of Nutrition and Food Sciences, Faculty of Home Economics, Menoufia University, Shibin El Kom, Egypt

*Corresponding author: Eman Atia, e-mail: emanzakaria090@gmail.com

ABSTRACT:

The current study was designed to investigate the effects of green coffee and Garcinia cambogia on weight loss in obese rats. Forty-eight male Sprague Dawley rats weighing between 150 and 160 grams were randomly divided into eight groups as follows: the first group consisted of a negative control group fed a basic diet (6 rats), while the second group consisted of obese groups (42 rats). Obesity was induced by feeding them 200 grams of fat in addition to the main diet for twenty days. They were then divided into seven subgroups (6 rats each): the first group was the positive control group; the second group of obese rats was fed a standard diet and 1.5% green coffee powder by weight of the diet; the third group was fed a standard diet and 3% green coffee powder by weight; the fourth group was fed a standard diet and 1.5% Garcinia powder by weight; the fifth group was fed a standard diet and 3% Garcinia powder by weight; the sixth group was fed a standard diet with a Mixture ture of green coffee and Garcinia powder at 1.5% by weight; and the seventh group was fed a standard diet with a Mixture ture of green coffee and Garcinia powder at 3% by weight. The study period was 28 days. The results indicated that both green coffee and Garcinia, especially at higher doses and in combination, significantly improved lipid levels, reduced the atherogenic index, improved leptin levels, and enhanced insulin sensitivity in obese male rats.

Keywords: *Lipids Profile, Leptin Levels, Serum Glucose, Obesity, Atherogenic Index*

Cite as: Albedewy et al., 2025, The Effect of Garcinia (Garcinia cambogia) and Green Coffee on Obese Rats. JHE, 35 (1), 19-27.
DOI:10.21608/mkas.2024.304285.1331

1. INTRODUCTION

Obesity is generally accepted as a worldwide epidemic with troublesome consequences. A trend of increasing prevalence of obesity and obesity-related co-morbidity and mortality was observed over the last few decades [1]. Obesity, a chronic disequilibrium between food consumption and energy expenditure, continues to be a major health problem in developed and developing countries [2]. Obesity, which is an imbalance between energy intake and expenditure, is associated with increased health-care costs, reduced quality of life, and increased risk of various chronic diseases such as heart and cardiovascular disease, type 2 diabetes, hypertension, hypercholesterolemia, and

various forms of cancer [3,4]. Genetic, physiological, psychological and gut microbial factors are responsible for the significant increase in prevalence of obesity and its sequels [5,6,7]. Currently, the available therapeutic approaches for treating obesity have a number of side effects. Therefore, it is an increasing interesting in natural products as anti-obesity agents [8, 9].

Recently, natural bioactive phytochemicals present in natural products have been discovered for their potential health benefit effects on the prevention of chronic disorders such as cancer, cardiovascular disease, inflammatory and metabolic diseases including obesity and insulin resistance. Polyphenols, a class of naturally-occurring phytochemicals, have been shown to modulate physiological and molecular pathways that are involved in energy metabolism, adiposity, and obesity [10]. In cell cultures and animal models of obesity, and in some human clinical and epidemiological studies have demonstrated that polyphenols have beneficial effects on adiposity and obesity as complementary agents in the up-regulation of energy expenditure [10].

Green coffee and *Garcinia* contain large amounts of polyphenols including proanthocyanidins, chlorogenic acids, catechins, and xanthones [11, 12, 13,14]. Among them, there were strong evidences that dyslipidaemia mediated by green coffee and *Garcinia*; insulin resistance mediated by green coffee, and *Garcinia*; inflammation mediated by green coffee and Garcinia [15]. Hence, the main objective of the research was to clarify the influence of different green coffee and Garcinia as well as their Mixture ed diet concentrations on obese albino rats who consuming a high-fat diet.

2. Materials and Methods

Materials:

Green coffee and Garcinia powder were purchased from Shana company, Shibin El-Kom, Menoufia, Egypt. Casein, starch, cellulose, choline chloride, Dl-methionine, vitamins, Mixture ture, and minerals Mixture ture were obtained from Morgan Co. Cairo, Egypt. Fat used in this study were purchased from the local market in Shibin El-Kom was obtained to cause obesity in rats.

Forty Adult male albino rats, Sprague Dawley strain, weighing (150+10g) were obtained from Research Institute of Ophthalmology, Giza, Egypt.

Methods:

Experimental approach

The research was conducted in Animal House at the faculty of home economic, Menoufia University, Egypt, according to Ethical approval number (MUFHE/S/NFS/18/24) of the Science Research Ethics Committee of Faculty of Home Economics.

Forty-eight grown-up male white rats, weighed 150gm, were utilized. For Twenty days straight, all rats received a standard diet in this test in accordance with (16).

Rats are classified into 8 groups as follows:

Group I: negative control Rats fed on basal diet (6 rats). Group II: obese groups (42 rats). obesity was induced by feeding them 200 gm fat in addition to the main food for twenty days according to [16] then divided into four sub groups (6 rats each), the first: positive control group, the second: obese rats were fed on standard diet and green coffee powder by 1.5% of the weight of the diet, third: obese rats were fed on standard diet and green coffee powder by 3% of the weight of the diet, fourth obese rats were fed on standard diet and Garcinia powder by 1.5% of the weight. Fifth group obese rats were fed on standard diet and Garcinia powder by 3% of the weight, sixth group obese rats were fed on standard diet and Mixture es of green coffee and Garcinia powder by 1.5% of the weight and Seventh group: obese rats were fed on standard diet and Mixture es of green coffee and Garcinia powder by 3% of the weight. At the end of experimental period (30 days), rats were after fasting for 12h and blood samples

were collected and centrifuged to obtain serum and kept in frozen until analysis.

Blood sampling:

After a 12-hour fast, blood samples of each rat were obtained from the hepatic portal vein at the finish line of each trial. The serum was taken away from the blood samples by centrifuging them for 10 min. at 4000 rpm after they had been drawn into dry, clean centrifuge tubes and allowed to clot for 30 minutes in a water bath (37°C). After gently collecting the serum into clean cuvette tubes, it was then frozen until analysis according to (17).

Biochemical analysis:

Total lipid was determined by colorimetric method according to [18]. triglycerides, total cholesterol and high-density lipoprotein ($HDL._C$) were determined according to [19], [20] and [21] respectively. Low density lipoprotein (LDL) and very low density (VLDL) were calculated according to the method of *[22]* using the following equations:

LDL (mg/dl) = Total cholesterol - ($HDL._C$+ VLDL).

VLDL (mg/dl) = Triglycerides ÷ 5

Serum glucose and HOMA IR were measured according to the methods described by [23]. leptin was measured according [24]

AI (Atherogenic Index):

The concentration of (AI) was estimated according to [25]. by calculation the follows:

$$AI = \frac{VLDL - c + LDL - c}{HDL - c}$$

Statistical analysis:

The results recorded as the mean ± SD. The experimental data were subjected to an analysis of variance (ANOVA) for a completely randomized design using a statistical analysis system. Duncan's multiple range tests were used to determine the deference's among means at the level of 5%.

3. Results and Discussion

The influence of green coffee and (*Garcinia cambogia*), as well as their Mixture es on the total cholesterol (TC) and triglycerides (TG) of obese male rats are revealed by the data displayed in Table (1).

Table (1): Effect of Green coffee and (Garcinia cambogia) on serum total cholesterol and triglycerides on obese rats.

Groups	T C (mg/dl)	TG (mg/dl)
Negative control groups	154.96e±0.26	133.15c±0.53
Positive control	219.60a±0.90	156.26a±1.27
Green coffee (1.5 mg/kg BW)	173.43b±1.25	145.56b±1.07
Green coffee (3 mg/kg BW)	168.10c±1.91	102.77f±2.18
Garcinia (1.5 mg/kg BW)	166.03d±1.02	134.00c±0.50
Garcinia (3 mg/kg BW)	145.06f±0.93	129.89d±0.60
MIXTURE (1.5 mg/kg BW)	142.66g±0.50	113.60e±1.60
MIXTURE (3 mg/kg BW)	127.90h±0.80	93.47g±0.52

TC =Total cholesterol. TG=Triglycerides. Each value represents the mean ± SD of three replicates. Means in the same column with different letters (a, b, c & d) are significantly different at P≤0.05.

The results showed that TC and TG values for positive control groups were significantly (P≤0.05) higher than those for negative control group. The results demonstrate that both green coffee and (*Garcinia cambogia*) significantly reduced serum total cholesterol (TC) and triglycerides (TG) levels in obese rats. The positive control group had the highest levels of TC and TG, while the groups treated with green coffee and (*Garcinia cambogia*) showed substantial reductions. Higher dosages of both substances (3 mg/kg BW) were more effective than lower dosages. The combined treatment (Mixture) yielded the

most significant reductions in both TC and TG levels, indicating a synergistic effect. Those results corroborated earlier findings presented by [26] found that that an 11-weeks administration of 0.3% and 0.9% decaffeinated green coffee bean significantly reduced high-fat-diet induced body weight gain and increments in plasma lipids, glucose, and insulin levels.

Table (2) displays the influence of green coffee and *Garcinia* cambogia, and their combination on the blood lipid fractions that is low-density lipoprotein (LDL-$_C$), very low-density lipoprotein (VLDL-$_C$), and high-density lipoprotein (HDL.$_C$ with obese albino rats. The positive control group had the lowest HDL.$_C$ levels and the highest LDL.$_c$ and VLDL$_C$ levels. Both green coffee and *Garcinia cambogia* improved lipid profiles, with the mixture (3 mg/kg BW) treatment showing the most significant effects: it increased HDL.$_C$ levels to the highest point (51.10 mg/dl) and achieved the greatest reductions in LDLc (60.12 mg/dl) and VLDL$_C$ (18.69 mg/dl). The findings are consistent with those of [27] showed that 5% (approximately equivalent to 294 mg/kg/d in human) aqueous extract of coffee for 8 weeks significantly attenuated hypertension and impairment in glucose homeostasis without affecting abdominal fat deposition and plasma lipid profile on a rat model of human metabolic syndrome., [28] revealed the Garcinia reduced inflammation and insulin resistance in human adipocytes. [29] have showed that 200 mg/kg BW (approximately equivalent to a dose of 16.26 mg/kg/d for humans) of (*Garcinia mangostana*) extract for significantly decreased TC, TG, and LDL-C levels in rats.

Table (2): Influence of Green coffee and (Garcinia cambogia) as well as their Mixture ture on lipid fractions of obese rats.

Groups	HDL.C (mg/dl)	LDL (mg/dl)	VLDLC (mg-dl)
Negative control groups	49.61ab±0.89	78.61c±1.35	26.62c±0.10
Positive control	43.45c±1.23	140.85a±0.84	31.25a±0.25
Green coffee (1.5 mg/kg BW)	48.22b±0.72	93.08b±0.49	26.80c±0.10
Green coffee (3 mg/kg BW)	48.97b±1.22	78.89c±1.66	22.72e±0.32
Garcinia (1.5 mg/kg BW)	49.63ab±0.87	91.08b±1.59	29.11b±0.21
Garcinia (3 mg/kg BW)	48.78b±0.22	91.27b±0.69	25.97d±0.12
Mixture (1.5 mg/kg bw)	49.08b±0.87	73.13d±1.66	20.55f±0.43
Mixture (3 mg/kg bw)	51.10a±0.40	60.12e±0.88	18.69g±0.10

LDL-c =Low-density lipoprotein. VLDL-c=Very low-density lipoprotein HDL.C -c = High-density lipoprotein. AI= Atherogenic index. Each value is the average over three replicates or mean + SD. Means with distinct lettered letters in the same column (a, b, c, & d) are significantly different at P≤0.05.

Table (3) the effect of green coffee and (*Garcinia cambogia*) on AI of control and obese rats, with the mixture (3 mg/kg BW) treatment being the most effective. The positive control group had the highest atherogenic index, indicating the greatest atherosclerosis risk. Among the treatments, mixture (3 mg/kg BW) resulted in the lowest atherogenic index, demonstrating the best improvement in reducing atherosclerosis risk, while Garcinia (1.5 mg/kg BW) had the highest atherogenic index among the treatments. This is in agreement with [30] demonstrated that a 6-week treatment of CCGG supplementation significantly reduced serum lipid content (TC, TG, and LDL-$_C$) and hepatic lipid content (TC and TG). Concerning our results showed effective dose started at CCGG-0.5X group (equivalent to 21 mg/kg/d in human).

Table (4) shows the effects of green coffee, (*Garcinia cambogia*), and their combination on leptin hormone levels and HOMA-IR in obese rats. The positive control group exhibited the highest leptin levels (3.52 ng/ml) and the lowest HOMA-IR (0.16), indicating

severe leptin resistance and poor insulin sensitivity.

Table (3) Effect of Green coffee and (Garcinia cambogia) on atherogenic index of negative and obese groups.

Groups	Atherogenic Index
Negative control groups	28.20b±0.31
Positive control	31.94a±0.85
Green coffee (1.5 mg/kg BW)	28.72b±0.68
Green coffee (3 mg/kg BW)	22.02d±0.91
Garcinia (1.5 mg/kg BW)	33.03a±0.73
Garcinia (3 mg/kg BW)	27.84b±0.32
MIXTURE (1.5 mg/kg BW)	24.53c±0.59
MIXTURE (3 mg/kg BW)	19.91e±0.76

Values are expressed as means ± SD; means in the same raw with different letter are significantly different (P < 0.05).

Among the treatments, the mixture (3 mg/kg BW) group showed the most significant improvements, with the lowest leptin level (0.70 ng/ml) and the lowest HOMA-IR value (0.28), suggesting the most effective reduction in leptin resistance and enhancement of insulin sensitivity. Green coffee and (*Garcinia cambogia*) treatments also reduced leptin levels and improved HOMA-IR to varying degrees, with Green Coffee (3 mg/kg BW) and Garcinia (3 mg/kg BW) showing moderate improvements. Our results align with findings from previous studies where green coffee extract significantly reduced leptin levels and improved insulin sensitivity [31] and (*Garcinia cambogia*) was shown to reduce body weight and improve metabolic markers [32]. Additionally, the combination of green coffee and (*Garcinia cambogia*) yielded the most significant improvements in these parameters, a result consistent with the synergistic effects of combined supplements on metabolic health [33]. The observed changes in leptin and HOMA-IR also support the role of these hormones in regulating insulin sensitivity and obesity [34].

Table (4) Effect of Green coffee and (Garcinia cambogia) on leptin hormone homa iR and of negative and obese groups

Groups	Leptin(ng-ml)	Homa IR
Negative control groups	1.50f±0.015	1.51a±0.05
Positive control	3.52a±0.01	0.16g±0.005
Green coffee (1.5 mg/kg BW)	3.22b±0.01	0.87b±0.08
Green coffee (3 mg/kg BW)	2.69c±0.015	0.59d±0.02
Garcinia (1.5 mg/kg BW)	1.74e±0.015	0.74c±0.03
Garcinia (3 mg/kg BW)	1.22g±0.01	0.73c±0.01
MIXTURE (1.5 mg/kg BW)	2.40d±0.10	0.42e±0.04
MIXTURE (3 mg/kg BW)	0.70h±0.015	0.28f±0.006

Values are expressed as means ± SD; means in the same raw with different letter are significantly different (P≤0.05).

Table 5 shows the effects of green coffee and (*Garcinia cambogia*) on serum glucose levels in obese rats. The positive control group had a serum glucose level of 106.68 mg/dl, which was slightly lower than the negative control group's 107.68 mg/dl. Among the treatments, the mixture (3 mg/kg BW) group showed the most significant reduction in glucose levels (92.15 mg/dl), followed by the mixture (1.5 mg/kg BW) group (94.10 mg/dl). Both green coffee treatments and Garcinia (1.5 mg/kg BW) did not significantly lower glucose levels compared to the positive control, but they were more effective than Garcinia (3 mg/kg BW). These findings confirm the claims made by (35) stated that green coffee and (*Garcinia cambogia*) demonstrated a drop in blood sugar while insulin levels remained unchanged. Therefore, it was determined that using green coffee and (*Garcinia cambogia*) for a longer period and at higher quantities than is currently done may also be beneficial.

Table (5): Effect of Green coffee and (Garcinia cambogia) on serum glucose of obese rats.

Groups	Glucose (mg/dl)
Negative control groups	107.68a±1.19
Positive control	106.68ab±1.12
Green coffee (1.5 mg/kg BW)	101.80c±0.69
Green coffee (3 mg/kg BW)	100.53c±0.96
Garcinia (1.5 mg/kg BW)	106.04ab±1.05
Garcinia (3 mg/kg BW)	105.43b±0.93
MIXTURE (1.5 mg/kg BW)	94.10d±0.51
MIXTURE (3 mg/kg BW)	92.15e±0.85

4. Conclusion

In conclusion, both green coffee and (*Garcinia cambogia*), particularly in higher doses and in combination, significantly improved lipid profiles, reduced atherogenic index, improved leptin levels, and enhanced insulin sensitivity in obese male rats. The synergistic effects observed in combined treatments suggest that these supplements may be highly effective in managing obesity-related metabolic disorders.

Conflict of Interest

The authors declare that there is no conflict of interest.

Funding

No fund has been received.

5. References

1. El-Shaer M, Diab L, El-Sharkawy S. Effect of intake of Garcinia cambogia peels on induced-obesity rats. J Home Econ Menoufia Univ. 2022;32(2):131-143. https://doi.10.21608/mkas.2022.119953.1117
2. Elhassaneen YA, Moustafa SSRWA. Biological studies on green coffee beans extracts and its relationship with obesity and diabetes mellitus diseases. J Home Econ. 2014;24(2). https://doi:10.47750/pnr.2022.13.S09.950
3. Eckel RH, Kahn SE, Ferrannini E, Goldfine AB, Nathan DM, Schwartz MW, Smith RJ, Smith SR. Obesity and type 2 diabetes: What can be unified and what needs to be individualized? J Clin Endocrinol Metab. 2011; 96:1654-63. https://doi.org/10.2337/dc11-0447
4. Lumeng CN, Saltiel AR. Inflammatory links between obesity and metabolic disease. J Clin Invest. 2011; 121:2111-7. https://doi:10.1172/JCI57132.
5. Koleva PT, Bridgman SL, Kozyrskyj AL. The infant gut microbiome: evidence for obesity risk and dietary intervention. Nutrients. 2015; 7:2237-60. https://doi:10.3390/nu7042237
6. Hill JO, Peters JC. Environmental contributions to the obesity epidemic. Science. 1998; 280:1371-1374. doi:10.1126/science.280.5368.1371.
7. Wickelgren I. Obesity: how big a problem? Science. 1998; 280:1364-7. https://doi:10.1126/science.280.5368.1364
8. Aguirre L, Fernández-Quintela A, Arias N, Portillo MP. Resveratrol: anti-obesity mechanisms of action. Molecules. 2014; 19:18632-55. https://doi:10.3390/molecules191118632
9. Wu T, Qi X, Liu Y, Guo J, Zhu R, Chen W, Zheng X, Yu T. Dietary supplementation with purified mulberry (Morus australis Poir) anthocyanins suppresses body weight gain in high-fat diet fed C57BL/6 mice. Food Chem. 2013; 141:482-7. https://doi: 10.1016/j. foodchem. 2013. 03. 046
10. Meydani M, Hasan ST. Dietary polyphenols and obesity. Nutrients. 2010; 2:737-51. https://doi: 10.3390/nu2070737
11. Wollgast J, Anklam E. Polyphenols in chocolate: is there a contribution to human health? Food Res Int. 2000; 33:449-59. https://doi: 10.1016/S0963-9969(00)00069-7
12. Celik T, Iyisoy A, Amasyali B. The effects of coffee intake on coronary heart disease: ongoing controversy. Int J Cardiol. 2010;

144:118. https://doi: 10.1016/j.ijcard.2008.12.112.
13. Sae-tan S, Grove KA, Lambert JD. Weight control and prevention of metabolic syndrome by green tea. https://doi:10.1016/j.phrs.2010.12.013
14. Pedraza-Chaverri J, Cardenas-Rodriguez N, Orozco-Ibarra M, Perez-Rojas JM. Medicinal properties of mangosteen (Garcinia mangostana). Food Chem Toxicol. 2008; 46:3227-39. https://doi.org/10.1016/j.fct.2008.07.024 .
15. Gu Y, Yu S, Lambert JD. Dietary cocoa ameliorates obesity-related inflammation in high fat-fed mice. Eur J Nutr. 2014; 53:149-58. https://doi: 10.1007/s00394-013-0510-1
16. Martínez-López S, Sarriá B, Sierra-Cinos JL, Goya L, Mateos R, Bravo L. Realistic intake of a flavanol-rich soluble cocoa product increases HDL-cholesterol without inducing anthropometric changes in healthy and moderately hypercholesterolemic subjects. Food Funct. 2014; 5:364-74. https://doi: 10.1039/c3fo60352k.
17. Tanigawa T, Kanazawa S, Ichibori R, Fujiwara T, Magome T, Shingaki K, Miyata S, Hata Y, Tomita K, Matsuda K, Kubo T. (+)-Catechin protects dermal fibroblasts against oxidative stress-induced apoptosis. BMC complementary and alternative medicine. 2014 Dec;14:1-7. https://doi.org/10.1186/1472-6882-14-133
18. Schmidt-Sommerfeld E, Penn D, Wolf H. The influence of maternal fat metabolism on fetal carnitine levels. Early Hum Dev. 1981;5(3):233-42. https://doi.org/10.1016/0378-3782(81)90031-1
19. Podsedek, A.; Sosnowska, D.; Redzynia, M.; and Anders, B. Antioxidant capacity and content of Brassica oleracea dietary antioxidants. International. (2006); Journal. of Food Science & Technology, 41(s1), 49-58. **https://doi.org/10.1111/j.1365-2621.2006.01260.x**
20. *Allain CC, Poon LS, Chan CS, Richmond W, Fu PC. Enzymatic determination of total serum cholesterol. Clin Chem. 1974;20(4):470-5.* https://doi.org/10.1093/clinchem/20.4.470
21. Lee YS, Kim WS, Kim KH, Yoon MJ, Cho HJ, Shen Y, Ye JM, Lee CH, Oh WK, Kim CT, Hohnen-Behrens C. Berberine, a natural plant product, activates AMP-activated protein kinase with beneficial metabolic effects in diabetic and insulin-resistant states. Diabetes. 2006 Aug 1;55(8):2256-64. *https://doi.org/10.2337/db06-0006*
22. Santaguida PL, Balion C, Hunt D, et al. Diagnosis, prognosis, and treatment of impaired glucose tolerance and impaired fasting glucose: summary. In: AHRQ Evidence Report Summaries. Rockville (MD): Agency for Healthcare Research and Quality (US); 2005 Aug. Report No.: 128. Available from: https://www.ncbi.nlm.nih.gov/sites/books/NBK11923/
23. IFCC Section. *Clinical Chemistry and Laboratory Medicine (CCLM)*. 1983;21(11): 731-760. https://doi.org/10.1515/cclm.1983.21.11.731
24. Sinha MK, Ohannesian JP, Heiman ML, et al. Nocturnal rise of leptin in lean, obese, and non-insulin-dependent diabetes mellitus subjects. J Clin Invest. 1996;97(5):1344-7. https://doi.org/10.1172/JCI118551
25. Shahat AA, Ahmed HH, Hammouda FM, Ghaleb H. Regulation of obesity and lipid disorders by *Foeniculum vulgare* extracts and *Plantago ovata* in high-fat diet-induced obese rats. Am J Food Technol. 2013;7(10):622-32. https://doi.10.3923/ajft.2012.622.632
26. Song SJ, Choi S, Park T. Decaffeinated green coffee bean extract attenuates diet-

induced obesity and insulin resistance in mice. Evid Based Complement Alternat Med. 2014;2014:718379. https://doi.org/10.1155/2014/718379
27. Elhassaneen YA, Ragab SS, Moustafa WA. Biological studies on green coffee beans extracts and its relationship with obesity and diabetes mellitus diseases. Journal of Home Economics. 2014;24(2). https://mkas.journals.ekb.eg
28. Panchal SK, Poudyal H, Waanders J, Brown L. Coffee extract attenuates changes in cardiovascular and hepatic structure and function without decreasing obesity in high-carbohydrate, high-fat diet-fed male rats. The Journal of nutrition. 2012 Apr 1;142(4):690-7. https://doi.org/10.3945/jn.111.153577
29. Bumrungpert A, Kalpravidh RW, Chuang CC, Overman A, Martinez K, Kennedy A, McIntosh M. Xanthones from mangosteen inhibit inflammation in human macrophages and in human adipocytes exposed to macrophage-conditioned media. J Nutr. 2010;140(4):842-7. https://doi.org/10.3945/jn.109.120022.
30. Chae HS, Kim YM, Bae JK, Sorchhann S, Yim S, Han L, Paik JH, Choi YH, Chin YW. Mangosteen Extract Attenuates the Metabolic Disorders of High-Fat-Fed Mice by Activating AMPK. J Med Food. 2015. https://doi: 10.1089/jmf.2015.3496
31. Hosseinabadi S, Rafraf M, Mahmoodzadeh A, Asghari-Jafarabadi M, Asghari S. Effects of green coffee extract supplementation on glycemic indexes, leptin, and obesity values in patients with non-alcoholic fatty liver disease. J Herb Med. 2020;22:100340. https://doi.org/10.1016/j.hermed.2020.100340
32. Golzarand M, Omidian M, Toolabi K. Effect of Garcinia cambogia supplement on obesity indices: a systematic review and dose-response meta-analysis. Complement Ther Med. 2020;52:102451. https://doi.org/10.1016/j.ctim.2020.102451.
33. Hsu CH, Huang TS. Synergistic effects of green coffee extract and Garcinia cambogia on leptin and insulin resistance in obese rats. J Nutr Health. 2013; 10(4):112-21. Chang CW, Hsu YJ, Chen YM, et al. Effects of combined extract of cocoa, coffee, green tea and garcinia on lipid profiles, glycaemic markers and inflammatory responses in hamsters. BMC Complement Altern Med. 2015;15:269. https://doi.org/10.1186/s12906-015-0806-1
34. Tiainen S, Ahotupa M, Ylinen P, et al. High density lipoprotein level is negatively associated with the increase of oxidized low density lipoprotein lipids after a fatty meal. Lipids. 2014;49(12):1225-32. https://doi.org/10.1007/s11745-014-3963-y

مجلة الاقتصاد المنزلي، جامعة المنوفية
https://mkas.journals.ekb.eg
الترقيم الدولي اون لاين الترقيم الدولي للطباعة
2735-5934 2735-590X

Received: 12 Aug 2024
Accepted: 12 Oct 2024

نوع المقالة: بحوث اصلية
التغذية وعلوم الاطعمة

تاريخ الاستلام: ١٢ اغسطس ٢٠٢٤:
تاريخ القبول: ١٢ أكتوبر ٢٠٢٤
تاريخ النشر: ١ ابريل ٢٠٢٥

تأثير القهوة الخضراء والجارسينيا علي الفئران المصابة بالسمنة

ليلي احمد البديوي، محمد مصطفى السيد، ايمان عطية*، وفاء احمد رفعت
قسم التغذية وعلوم الأطعمة، كلية الاقتصاد المنزلي، جامعة المنوفية، شبين الكوم، مصر.
* **المؤلف المسئول:** ايمان عطية، البريد الالكتروني: emanzakaria090@gmail.com

الملخص العربى:
تم تصميم الدراسة الحالية لدراسة تأثير القهوة الخضراء والجارسينيا على إنقاص الوزن في الفئران المصابة بالسمنة. تم تصنيف ثمانية وأربعين ذكرًا من فئران سبراغ داولى البيضاء التى يتراوح وزنها بين 150 و160 جرامًا بشكل عشوائي إلى ثماني مجموعات على النحو التالي: المجموعة الأولى: فئران ضابطة سالبه تتغذى على نظام غذائى أساسى (6 فئران). المجموعة الثانية: مجموعات بدينة (42 فأرًا). تم إحداث السمنة عن طريق إطعامهم 200 جرام دهون بالإضافة إلى الغذاء الرئيسى لمدة عشرين حسب كانج وآخرون (2005) ثم تم تقسيمهم إلى سبع مجموعات فرعية (6 فئران لكل منها) المجموعة الأولى: مجموعة ضابطه موجبه ، المجموعة الثانية: تم تغذية الفئران البدينة على الغذاء القياسي ومسحوق القهوة الخضراء بنسبة 1.5٪ من وزن الغذاء، المجموعة الثالثة: تم تغذية الفئران البدينة على الغذاء القياسى ومسحوق القهوة الخضراء بنسبة 3٪ من وزن الغذاء، المجموعة الرابعة: تم تغذية الفئران البدينة على الغذاء القياسى ومسحوق الجارسينيا بنسبة 1.5٪ من الوزن. المجموعة الخامسة: تم تغذية الفئران البدينة على الغذاء القياسى ومسحوق الجارسينيا بنسبة 3٪ من الوزن، المجموعة السادسة: تم تغذية الفئران البدينة على الغذاء القياسى ومخاليط من القهوة الخضراء ومسحوق الجارسينيا بنسبة 1.5٪ من الوزن والمجموعة السابعة: تم تغذية الفئران البدينة على الغذاء القياسى ومخاليط من القهوة الخضراء ومسحوق الجارسينيا بنسبة 3٪ من الوزن. وكانت فترة الدراسة 28 يومًا. أشارت نتائج البيانات المتحصل عليها إلى أن كلاً من القهوة الخضراء والجارسينيا، وخاصة بجرعات أعلى وبالاشتراك معاً، أدى إلى تحسين مستويات الدهون بشكل ملحوظ، وخفض مؤشر تصلب الشرايين، وتحسين مستويات اللبتين، وتعزيز حساسية الأنسولين لدى الفئران الذكور البدينة.

الكلمات الكاشفة: دهون الدم ، مستويات الليبتين ، الجلوكوز في الدم ، السمنة ، مؤشر تصلب الشرايين.

الاستشهاد الي:
Albedewy et al., 2025, The Effect of Garcinia (Garcinia cambogia) and Green Coffee on Obese Rats. JHE, 35 (1), 19-27.
DOI:10.21608/mkas.2024.304285.1331