

The Efficacy of Weight Loss Supplements

Igho Onakpoya*

Department of Primary Care Health Sciences, University of Oxford, United Kingdom

The increased prevalence of obesity and overweight over the last few decades has resulted in popularity with the use of dietary supplements as weight loss aids [1]. Though hundreds of these supplements are readily available as Over-The-Counter (OTC) pills, the efficacy of most is unproven. Physicians are also uncertain about the therapeutic benefit of such supplements.

Several clinical trials evaluating the efficacy and safety of weight loss supplements have been conducted, and numerous systematic reviews are available in the literature. A recent overview of systematic reviews [2] evaluated the effects of nine dietary supplements, including guar gum, chromium picolinate, *Ephedra spp.*/ephedrine, bitter orange (*Citrus aurantium*), conjugated linoleic acids, calcium, glucomannan, chitosan and green tea (*Camellia sinensis*). While some of these supplements showed no positive effects on body weight, others seemed to have some beneficial effects. A variety of mechanisms through which these supplements cause reductions in body weight have been proposed and include appetite suppression, stimulation of fat oxidation, delayed gastric emptying, inhibition of adipogenesis, as well as reduction of intracellular calcium concentrations [1,2].

The results of some well reported clinical trials have suggested that some dietary supplements generate appreciable losses in body weight and fat when compared with placebo; in fact, for some of these supplements the reductions have been reported to be statistically significant [3,4]. However, the clinical significance of such reductions is at best modest, and it is unclear whether or not, such effects are maintained on the medium- to long-term. It has been postulated that while these supplements may not cause large reductions in overweight and obese individuals, they may be beneficial in preventing weight gain in some groups of persons who are at risk [5]. A few other supplements have been reported to be efficacious in reducing body weight [6-8], but the paucity of clinical trials evaluating the effects of such supplements limits conclusions which can be drawn about their efficacy in reducing body weight.

A major impediment in evaluating the efficacy of weight loss supplements is the lack of consistency in the quality of reporting amongst different trials investigating their effects. Several clinical trials involving weight loss supplements are deficient in the reporting of their methodology. Such deficiencies include unclear methods of randomization and allocation concealment techniques, poor description of how blinding of both care providers and study participants was achieved, failure to report whether or not, there was sample size calculation *ab initio*, and failure to conduct intention-to-treat analysis. These factors cast doubts on the internal and external validity of their study findings, and can lead to spurious results [9,10]. Discrepancies in daily dosages, inconsistencies in how lifestyle adjustments were applied across different trials, and the short duration of a lot of the studies (which limits conclusions that can be drawn about the long-term effects of such supplements) are also drawbacks while trying to evaluate the efficacy of these supplements. Furthermore, variations in the methods used to carry out anthropometric measurements could influence the directions of the study results. It is therefore imperative that clinical trial investigators adhere strictly to standardized reporting guidelines when reporting their trial methodology and results [11].

The use of dietary supplements as weight loss aids is not entirely risk-free. Because these supplements are termed "natural", consumers presume this means that they are safe. Since most of the clinical trials are of short duration, any medium- to long-term side effects may not be apparent in the course of the trial. However, reports of adverse effects associated with their use are available in the literature [12], and it will be prudent for future investigations to incorporate surveillance time frames into their trial designs [13]. This will allow for identification and documentation of any supplement-specific side effects on the medium- to long-term.

In conclusion, the available evidence from clinical trials fails to prove that most of the commonly available OTC weight loss supplements are beneficial to body weight and related parameters. Results of clinical trials have also revealed that a few supplements have possible beneficial effects, but the clinical relevance of these is uncertain. High quality trials with better reporting methods will allow for a more objective assessment of their effects on body anthropometric measures. Until such trials emerge, and their efficacy (and safety) documented beyond doubt, it does not seem appropriate to recommend them as weight loss aids.

References

1. Saper RB, Eisenberg DM, Phillips RS (2004) Common Dietary Supplements for Weight Loss. *Am Fam Physician* 70: 1731-1738.
2. Onakpoya IJ, Wider B, Pittler MH, Ernst E (2011) Food supplements for body weight reduction: a systematic review of systematic reviews. *Obesity* 19: 239-244.
3. Onakpoya IJ, Perry R, Zhang J, Ernst E (2011) Efficacy of calcium supplementation for management of overweight and obesity: systematic review of randomized clinical trials. *Nutr Rev* 69: 335-343.
4. Phung OJ, Baker WL, Matthews LJ, Lanosa M, Thorne A, et al. (2010) Effect of green tea catechins with or without caffeine on anthropometric measures: a systematic review and meta-analysis. *Am J Clin Nutr* 91: 73-81.
5. Gonzalez AJ, White E, Kristal A, Littman AJ (2006). Calcium intake and 10-year weight change in middle-aged adults. *J Am Diet Assoc* 106: 1066-1073.
6. Onakpoya I, Terry R, Ernst E (2011) The use of green coffee extract as a weight loss supplement: a systematic review and meta-analysis of randomised clinical trials. *Gastroenterol Res Pract* pii: 382852.
7. Ross SM (2011) African mango (IGOB131): a proprietary seed extract of *Irvingia gabonensis* is found to be effective in reducing body weight and improving metabolic parameters in overweight humans. *Holist Nurs Pract* 25: 215-217.

*Corresponding author: Igho Onakpoya, Department of Primary Care Health Sciences, University of Oxford, New Radcliffe House, Radcliffe Observatory Quarter, Oxford, United Kingdom, Tel: + 44 (0) 1865 289672; E-mail: igho.onakpoya@phc.ox.ac.uk

Received September 16, 2012; Accepted September 17, 2012; Published September 21, 2012

Citation: Onakpoya I (2012) The Efficacy of Weight Loss Supplements. *J Clin Trials* 1:e105. doi:10.4172/2167-0870.1000e105

Copyright: © 2012 Onakpoya I. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

-
8. Boozer CN, Nasser JA, Heymsfield SB, Wang V, Chen G, et al. (2001) An herbal supplement containing Ma Huang-Guarana for weight loss: a randomized, double-blind trial. *Int J Obes Relat Metab Disord* 25: 316-324.
 9. Akobeng AK (2008) Assessing the validity of clinical trials. *J Pediatr Gastroenterol Nutr* 47: 277-282.
 10. Ioannidis JP (2005) Why Most Published Research Findings Are False. *Plos Med* 2: e124.
 11. Schulz KF, Altman DG, Moher D. (2010) CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomised Trials. *BMJ* 340: c332.
 12. Pittler MH, Schmidt K, Ernst E (2005) Adverse events of herbal food supplements for body weight reduction: a systematic review. *Obes Rev* 6: 93-111.
 13. Ioannidis JP, Evans SJ, Gøtzsche PC, O'Neill RT, Altman DG, et al. (2004) Better reporting of harms in randomized trials: an extension of the CONSORT statement. *Ann Intern Med* 141: 781-788.