The effects of hoodia gordonii on weight loss

Abstract

Natural health products are the new health care treatment and with increasing rates of obesity in Canada, the use of Hoodia gordonii as an appetite suppressor could be the future treatment for obesity. My objective is to obtain research from peer reviewed articles determining if Hoodia gordonii does have an effect on weight loss and obesity and is it safe for consumption. My design is reviewing peer-evaluated articles and resulting in a conclusion to whether Hoodia gordonii is effective and safe for consumption. Although results have no significance towards weight loss due to limited evidence and the consumption of this product may lead to adverse side effects, further studies can be conducted. Inconclusive data from most of the studies conclude that Hoodia gordonii does not have a significant effect on weight loss and individuals should not consume due to the unknown appropriate doses and negative side effects.

Introduction

Slowly the population is converting into using natural health products to cure their health related issues assuming natural products are safer and easier to obtain. At this time period, several people are trying out products without knowing the fact if the product is it actually effective or safe and what are the possible benefits and negative side effects? Hoodia gordonii has slowly been on the rise as it’s claimed for its appetite suppressing properties and its use for treating people with obesity. There are increasing rates of obesity in Canada and its concerning negative health consequences are likely to become an increasing strain on Canada’s health care system. Consumers are

looking for safe, fast and effective treatments for weight loss without the need of a prescription. According to Smith & Krygsman (2014), pharmaceutical companies provide a set of conditions for herbal plant substances made available into teas, supplements, powders and many more, however, the doses and amounts are unknown, as well as inconsistencies in different sources of the same plant, some not even containing the specific plant said to help the cure (p. 987). One of the key components of weight loss is promoting a balanced diet with exercise and to find a product that not only helps control one's energy intake but could result in weight loss which could significantly benefit individuals trying to treat obesity (Dent, Wolterbeek, Russell & Bradford, 2012, p. S26). The question asked is does Hoodia gordonii have an effect on weight loss and obesity and is it safe for consumption? The peer-reviewed articles that were researched suggests that although Hoodia gordonii may be associated with weight loss, there is very limited evidence that suggests that Hoodia gordonii is safe to consume and effective for the use of weight loss.

Materials and methods

The list of methods and materials each conducted by the researchers are presented in order from weakest study to strongest study, also the mentioning of strengths and weaknesses of each methodology will be discussed.

The case report conducted by Whelan, Jurgens, & Szeto (2010) stated that subject " MH" who did not want her name disclosed is a " 57 year old overweight female" seeking advice to cure obesity by using natural products

such as Hoodia, to help achieve her weight loss goals (p. 609). MH has a " Body mass index of 28. 6 [which is considered overweight], a weight of 70. 5 kg, a height of 61. 75 inches and her waist circumference is 35 inches" (Whelan et al., 2010, p. 610). Whelan et al. (2010) noted that MH is not taking any other prescription medicines or natural products, but is aware of the negative factors that associate with obesity. (p. 610) The strengths of this case report had the ability to focus on one individuals diagnosis, symptoms, and treatments, however, the limitations of this study was that the subject ultimately did not choose to take Hoodia as a treatment to help with weight loss which led to inconclusive results in this case report.

On the contrary to the case report, Dent, Wolterbeek, Russell & Bradford (2012) created a toxicity study on the safety profile of Hoodia gordonii extract on rabbit prenatal developmental. They organized a studied using a Hoodia gordonii extract that was force-fed orally to a group of 22 white rabbits from New Zealand (p. S26). Dent et al. (2013) used dried extracts of the whole plant Hoodia gordonii, eliminating the roots, followed by a " purification step with heptane and heptane/methyl-ethyl-ketone" (p. S27). After mating the rabbits they would be administered " doses of 0 (control), 3, 6 or 12 mg/kg bodyweight/day" (Dent et al., 2013, p. S26) from day 3 to 28 and after these doses were reached, on day 29 the white rabbits were euthanized and further examined. The strength of this study was conducting a safety profile of the plant itself and to see at what amount of doses of Hoodia gordonii would reach the toxic level in female white rabbits. It is important to obtain information of the negative effects and toxicity levels of certain plants first, however a weakness found in common of most in vivo

studies was that there were many published studies on animals leading to inconclusive results on whether its effective and safe on humans.

Similarly to Dent et al., Smith and Krygsman (2014) decided to perform a in vivo study on their own starting off with lean and fat rats in order to observe more effects the Hoodia gordonii plant had on animals. The rats were “ extracted twice daily for 14 days with both 80 and 160mg of Hoodia gordonii which resulted in striking weight loss” (p. 989). Although Smith and Krygsman (2014) studied many in vivo studies in rats, it was to their knowledge that this was the only report on effects of Hoodia gordonii in rats both lean and obese. (p. 989). Due to the limited inconclusive data on the human studies, Smith and Krygsman thought it was necessary to consider results from in vivo animals, in order to obtain more insight. Similarly to Dent et al., both studies on in vivo rats and rabbits can yield information regarding effects lead by repeated exposures, having said that, randomized controls on humans are stronger in demonstrating that human exposure to some substances.

Blom et al. (2011) conducted a randomized, controlled, double blind, study on healthy, overweight women, to demonstrate a safe and effective use of purified extracts of Hoodia gordonii on the effect of weight loss. The women were aged 18-50 years old in which they each consumed either a “ purified extract of Hoodia gordonii known as HgPE” (p. 1171), or a placebo repeatedly for fifteen days. Blom et al., 2011 allowed each of the women two servings per day of “ 1110mg of HgPE or the placebo” (p. 1171), which was developed into a drinkable yogurt and the women were ordered to drink it one hour before breakfast and dinner. Blom et al. (2011) also noted that

these women were allowed to eat whatever they desired “ ad libitum”, from any “ standardized menus” during this study (p. 1171). One of the main strengths of this study was that this was one of few published randomized controlled double blind studies done on humans. The weakness of this study was that it was only studied on 49 women, which may lead to gender bias and its affect on evidence-based medicine. The problem with gender specific data creates results based on the study of one sex being generalized to both genders.

All things considered, each of these studies provide key information on the plant, but for it to be safely consumed we need more conclusive results on adverse effects and appropriate doses and more published randomized controlled trial studies on humans to be further investigated.

Results

According to Whelan, Jurgens, & Szeto (2010), subject “ MH” decided to not use Hoodia gordonii as a cure for her weight loss due to inconclusive evidence of the product. For the case of MH, it did not seem to appear as harmful, however, research done by Whelan, Jurgens, & Szeto (2010) concluded the limited evidence researched did not show any beneficial effects which led her decision to not consume this product and to look for other options to help with her weight loss (p. 611). Whelan, Jurgens, & Szeto (2010) concluded their study by researching other peer reviewed trials instead of subject “ MH” by stating that there was not enough clinical evidence to support its safety and efficacy (p. 611). Although the preliminary unpublished trials concluded that Hoodia is an effective product for weight

loss, researchers were left without the “ appropriate content of the product, optimal dose and duration of use, long-term safety use” (p. 611), for the general public and with similar diseases associated with obesity.

Dent, Wolterbeek, Russell & Bradford (2012) concluded that 16mg/kg of Hoodia gordonii per day resulted in “ a marked reduction in feed and to a lesser extent water intake” (p. S28). The effect of how much the rabbits consumed maintained over the major parts of the gestation in the rabbits which led to exceeding the maximum amount of dosage tested on the pregnant rabbits which was 16mg/kg per day (Dent et al., 2012, p. S28). Although there were not any negative side effects and “ reproductive indices” were not affected, the most significant finding Dent et al. (2012) found was a “ macroscopic examination of the females on day 29 after mating was thickened stomach content in 3/6 animals at 16 mg/kg per day” (p. S28). There was also a clear but not recorded or constant reduction in the consumption of food at 8 mg/kg/day (p. S28).

Smith and Krygsman (2014) concluded at this stage, there is “ no doubt that Hoodia gordonii decreases energy intake resulting in weight loss” (p. 991), however given the results of the negative side effects and the limited evidence on how the plant is responsible for these adverse effects, they suggests individuals prevent from consuming Hoodia gordonii” (p. 991). There are negative side effects to consuming large amounts of this product which could lead to “ potentially lethal hypertension, loss of skeletal muscle mass and general feelings of gastrointestinal discomfort” (Smith & Krygsman, 2014, p. 991). Although Hoodia gordonii seems to have a desired effect on appetite and weight loss, it may only be associated with

effectiveness appetite and loss of weight and high doses are not safe and could lead to dangerous side effects. Measure of dosage and the underlying side effects that follow after are inconclusive to this study. There just is not enough scientific evidence to conclude that this product is safe and effective in humans. The appropriate dosage to prescribe and the negative side effects that come along with it do not counterbalance the effectiveness of this product. Smith and Krygsman did not fully exclude the chance that Hoodia has an effect however suggested that more research needs to be studied to better understand the plants biological action" (p. 991).

Blom et al. (2011) reported that over a 15-day period of repeated consumptions of the purified extract of Hoodia gordonni under specific conditions, " it had no significant effects on energy intake, body weight, or percentage body fat" (p. 1179) in healthy overweight female compared to the consumption of the placebo. None of the subjects dealt with severe side effects but the purified extract of Hoodia gordonni was " less well tolerated than the placebo and produced adverse changes in some clinical measures" (Blom et al., 2011, p. 1179). In conclusion there was no statistical significance in this study and the data reported did not prove enough evidence of efficacy and safety in terms of weight loss and energy intakes in the treatment group compared to the placebo group. Being the few of limited published studies on humans, Blom et al. (2012) had the most convincing and provide the most significant scientific contribution because it had peer reviewed randomized controlled trials on humans even though the results did not show effectiveness this study was the strongest out of all the rest.

Discussion

This discussion will examine the problems in the study and explain the meaning and importance of the findings. There will also be areas of controversy discussed in some reviews. The problem with all these studies was that there was only a limited amount of published, scientific peer reviewed articles. Most of the researchers found unpublished data that were not peer reviewed and not reliable only listing the positive side effects without stating the right amount of dosage leading to inconclusive results. Due to Whelan, Jurgens, & Szeto (2010) study being the oldest reviewed, the researchers had a hard time finding randomized controlled trials on humans so they decided to conduct a case report. This ended up being one of the weakest case reports because the subject eventually did not choose to use it due to the limited evidence shown that it did not benefit her from using it as a treatment. Smith and Krygsman (2014) did not fully exclude the use of Hoodia gordonii on the effect to weight loss however, for it to be deemed safe and effective, they are open for more research and studies based on this specific genus of Hoodia gordonii (p. 991). The need for a independent study including all side effects and doses should be conducted, but due to the lack of evidence, individuals are not recommended to consume any Hoodia. With such minimal statistical results made by these studies, it is difficult for researchers to interpret the results objectively; some studies cannot be considered scientific proof of efficacy. According to Smith and Krygsman (2014), “ several pharmaceutical companies that were initially involved in the commercial development of Hoodia gordonii have subsequently withdrawn their interest which raises the

question of whether this plant may have as yet unreported side effects” (p. 988). The controversies of pharmaceutical companies approving this plant is also a concern since there is no reason to why they randomly withdrew. All things considered, although there were no significant effects of Hoodia gordonii on weight loss, the studies can conclude that with further studies and research, there may be an association.

Conclusion

In summary, of all the reviews, there is not enough published scientific evidence to conclude that it is safe and effective in humans The correct dosage to prescribe and the negative side effects are the main concerns of safety that result in consuming Hoodia gordonii. With only one in very few published randomized controlled human trials conducted by Blom et al. (2011), they concluded that there was no significance to whether Hoodia gordonii had an effect on weight loss. Although one should not exclude the fact that there could be an effect on weight loss when consuming Hoodia gordoni, further studies and more randomized controlled human trials are needed. The in vivo studies showed a high effect on weight loss, however the measure of dosage and the underlying side effects that follows after are inconclusive. More published peer reviewed and scientific evidence should be provided to really proof Hoodia gordonii is safe and effective.

This literature review is limited in scope, a further study of Hoodia gordonii could review the effects it has on possible mechanisms of cardiovascular Side Effects or conduct future research testing the effect Hoodia gordonii on males. The studies’ design did not adequately reach conclusions as there

was not enough evidence to conclude the efficacy and safety of Hoodia gordonii.

References

- Blom, W. A., Abrahamse, S. L., Bradford, R., Duchateau, G. S., Theis, W., Orsi, A., ...
- Mela, D. J. (2011). Effects of 15-d repeated consumption of Hoodia gordonii purified extract on
- safety, ad libitum energy intake, and body weight in healthy, overweight women: a randomized
- controlled trial. *The American Journal of Clinical Nutrition* , *94* (5), 1171-1181. Retrieved from
- https://doi. org/10. 3945/ajcn. 111. 020321
- Dent, M. P., Wolterbeek, A. P. M., Russell, P. J., & Bradford, R. (2012). Safety profile of
- Hoodia gordonii extract: rabbit prenatal developmental toxicity study. *Food And Chemical*
- *Toxicology: An International Journal Published For The British Industrial Biological Research*
- *Association* , *50 Suppl 1* , S26–S33. https://doi-org. ezproxy. langara. bc. ca/10. 1016/j. fct. 2011. 04. 008
- Smith, C., & Krygsman, A. (2014). Hoodia gordonii: to eat, or not to eat. *Journal Of Ethnopharmacology* , *155* (2), 987–991. https://doi-org. ezproxy. langara. bc. ca/10. 1016/j. jep. 2014. 06. 033
- Smith, C., & Krygsman, A. (2014). Hoodia gordonii extract targets both adipose and muscle tissue to achieve weight loss in rats. *Journal Of*

Ethnopharmacology , *155* (2), 1284–1290. https://doi-org. ezproxy. langara. bc. ca/10. 1016/j. jep. 2014. 07. 018

- Whelan, A. M., Jurgens, T. M., & Szeto, V. (2010). Case report. Efficacy of Hoodia for weight loss: is there evidence to support the efficacy claims? *Journal Of Clinical Pharmacy And Therapeutics* , *35* (5), 609–612. https://doi-org. ezproxy. langara. bc. ca/10. 1111/j. 1365-2710. 2009. 01116. x