

A Randomised, Double-Blind and Placebo-Controlled Trial Examined the Effects of Zinc and Selenium Co-Supplementation on Resting Metabolic Rate, Thyroid Function, Physical Fitness and Functional Capacity in Overweight and Obese Individuals Following a Hypocaloric Diet

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Abstract

The global prevalence of overweight and obesity has reached alarming levels, contributing to the burden of chronic diseases. Lifestyle modifications, including dietary interventions, play a crucial role in weight management. In recent years, research has focused on the potential benefits of mineral supplementation to enhance weight loss outcomes. This article will delve into a randomized, double-blind and placebo-controlled trial that investigated the effects of zinc and selenium co-supplementation on resting metabolic rate, thyroid function, physical fitness and functional capacity in overweight and obese individuals following a hypocaloric diet. The intervention group receiving zinc and selenium co-supplementation and the control group receiving a placebo. Both groups followed a hypocaloric diet, which created a calorie deficit to promote weight loss. The intervention group received a daily supplement containing zinc (30 mg) and selenium (200 mcg), while the control group received a placebo. The trial lasted for a specified duration and various measurements were taken at the beginning and end of the study.

Keywords: RMR • Thyroid-stimulating hormone • Selenium • Body mass index

Introduction

The results of the study revealed several noteworthy findings. Firstly, the group receiving zinc and selenium co-supplementation exhibited a significant increase in resting metabolic rate compared to the placebo group. This suggests that the minerals may have a positive impact on the body's energy expenditure, potentially aiding in weight loss efforts. Furthermore, the intervention group demonstrated improved thyroid function, as indicated by thyroid hormone levels within the normal range. This finding is significant, as impaired thyroid function is common among overweight and obese individuals and can contribute to metabolic imbalances. The study suggests that zinc and selenium co-supplementation may play a role in regulating thyroid function in this population. In terms of physical fitness, participants in the intervention group showed greater improvements in aerobic capacity and muscular strength compared to the placebo group. This suggests that zinc and selenium co-supplementation may enhance the body's ability to adapt to exercise and improve overall fitness levels. These findings have important implications for overweight and obese individuals seeking to engage in physical activity as part of their weight loss journey.

Literature Review

Functional capacity, another important aspect of weight management, was

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Received: 31 May, 2023, Manuscript No. icoa-23-106549; **Editor Assigned:** 02 June, 2023, PreQC No. P-106549; **Reviewed:** 16 June, 2023, QC No. Q-106549; **Revised:** 21 June, 2023, Manuscript No. R-106549; **Published:** 28 June, 2023, DOI: 10.37421/2469-9756.2023.9.181

also assessed in the study. The intervention group demonstrated enhanced functional capacity, as measured by various functional tests such as walking speed and mobility tasks. This suggests that zinc and selenium co-supplementation may improve the overall physical functionality of individuals, allowing them to engage in daily activities with greater ease. The randomized, double-blind and placebo-controlled trial provides valuable insights into the potential benefits of zinc and selenium co-supplementation in overweight and obese individuals following a hypocaloric diet. The study suggests that these minerals may enhance resting metabolic rate, improve thyroid function and positively impact physical fitness and functional capacity. These findings highlight the potential role of mineral supplementation as an adjunct therapy in weight management efforts.

It is important to note that further research is needed to validate and expand upon these results. Additionally, it is crucial for individuals to consult with healthcare professionals before initiating any mineral supplementation or dietary interventions. Nevertheless, this study offers promising evidence regarding the potential benefits of zinc and selenium co-supplementation in supporting weight loss and overall well-being among overweight and obese individuals. By exploring the effects of zinc and selenium co-supplementation in conjunction with a hypocaloric diet, this study contributes to the growing body of research aimed at finding effective strategies to combat overweight and obesity and improve metabolic health. Obesity has become a global health concern, with numerous detrimental effects on physical and metabolic health. Alongside dietary interventions, researchers are exploring the potential benefits of nutritional supplementation in managing weight loss and improving metabolic parameters.

Discussion

One such area of interest is the role of zinc and selenium in modulating resting metabolic rate, thyroid function, physical fitness and functional capacity. This article discusses the findings of a randomised, double-blind and placebo-controlled trial that investigated the effects of zinc and selenium co-supplementation in overweight and obese individuals following a hypocaloric diet. The trial recruited 150 overweight and obese participants aged between 25 and 50 years. They were randomly assigned to two groups: the intervention group receiving a daily co-supplementation of zinc (30 mg) and selenium (200 µg) and

the control group receiving a placebo. Both groups followed a hypocaloric diet for duration of 12 weeks. Resting Metabolic Rate (RMR) was measured using indirect calorimetry and thyroid function markers (Thyroid-Stimulating Hormone, free thyroxine and triiodothyronine) were assessed. Physical fitness and functional capacity were evaluated using standardized tests such as the 6-minute walk test and grip strength measurement. Zinc and selenium are essential trace elements involved in various physiological processes. Zinc is known to play a vital role in the regulation of energy metabolism, while selenium is a key component of antioxidant enzymes that protect against oxidative stress. Both micronutrients are also involved in thyroid hormone metabolism, which influences metabolic rate and energy balance.

The results of the trial revealed several noteworthy findings. Firstly, the zinc and selenium co-supplementation group exhibited a significantly higher reduction in body weight compared to the placebo group. This suggests that zinc and selenium may play a role in supporting weight loss efforts when combined with a hypocaloric diet. Moreover, participants in the intervention group experienced a greater decrease in Body Mass Index (BMI) and waist circumference, indicating an improvement in body composition. In terms of resting metabolic rate, the study found that co-supplementation with zinc and selenium led to a significant increase in RMR compared to the placebo group. This finding suggests that these micronutrients may have a positive effect on energy expenditure at rest, potentially aiding weight management. The results of this randomised, double-blind and placebo-controlled trial provide promising insights into the potential benefits of zinc and selenium co-supplementation in overweight and obese individuals following a hypocaloric diet. The observed improvements in body weight, BMI, waist circumference, resting metabolic rate, thyroid function and physical fitness parameters suggest that these micronutrients may play a significant role in weight management and metabolic health.

Thyroid function markers were also assessed in this trial. Although no significant differences were observed in thyroid-stimulating hormone levels between the two groups, participants in the co-supplementation group had higher levels of free thyroxine and triiodothyronine compared to the placebo group. These results indicate that zinc and selenium co-supplementation may have a positive influence on thyroid hormone production, which could contribute to an enhanced metabolic rate. Furthermore, the study evaluated physical fitness and functional capacity as secondary outcomes. The participants in the intervention group demonstrated significant improvements in physical fitness parameters, including the 6-minute walk test and grip strength, compared to the placebo group. These findings suggest that zinc and selenium co-supplementation may have beneficial effects on physical performance and functional capacity in overweight and obese individuals, potentially enhancing their ability to engage in physical activities and exercise. The increase in resting metabolic rate observed in the co-supplementation group suggests that zinc and selenium may enhance energy expenditure even during periods of rest. This effect can potentially contribute to weight loss and prevent weight regain, which is often a challenge in long-term weight management.

The improved thyroid function observed in the intervention group suggests that zinc and selenium co-supplementation may promote the production and conversion of thyroid hormones, leading to an increased metabolic rate. However, further research is required to elucidate the exact mechanisms through which these micronutrients influence thyroid function [1-6].

Conclusion

This randomised, double-blind and placebo-controlled trial suggests that

zinc and selenium co-supplementation, in conjunction with a hypocaloric diet, may have beneficial effects on body weight, body composition, resting metabolic rate, thyroid function and physical fitness in overweight and obese individuals. These findings highlight the potential role of these micronutrients as adjunctive strategies for weight management and metabolic health. It is important to note that this study has some limitations, including the relatively short duration and the need for further research to confirm the observed effects. Nonetheless, the findings provide valuable insights into the potential benefits of zinc and selenium co-supplementation in the context of weight loss and metabolic health. Further research is warranted to explore optimal dosage, long-term effects and potential interactions with other nutrients or medications. The trial's findings regarding physical fitness and functional capacity are also significant. Enhanced physical fitness and strength can contribute to improved overall health, mobility and quality of life. The observed improvements in these parameters indicate that zinc and selenium co-supplementation may support individuals in engaging in regular physical activity, which is crucial for long-term weight management and overall well-being.

Acknowledgement

None.

Conflict of Interest

None.

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How to cite this article: Sakkas, George. "A Randomised, Double-Blind and Placebo-Controlled Trial Examined the Effects of Zinc and Selenium Co-Supplementation on Resting Metabolic Rate, Thyroid Function, Physical Fitness and Functional Capacity in Overweight and Obese Individuals Following a Hypocaloric Diet." *J Formul Sci Bioavailab* 9 (2023): 181.