
Prysm iO Dose Response Clinical Study

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BACKGROUND

Prysm iO is a nutritional wellness assessment device that utilizes hyperspectral absorption technology to measure carotenoids, a class of antioxidants abundant in fruits and vegetables that play a critical role in protecting the body from oxidative stress for supporting full spectrum health benefits including healthy aging (1). Prysm iO provides a skin carotenoid score (SCS or Prysm score) with a numeric value and color (for more details, see appendix).

With each scan, users receive their Prysm score with insights on how their current nutrition and supplement routine supports antioxidant levels, in addition to other lifestyle and fitness factors that correlate to Prysm scores (2). When used regularly, Prysm iO enables tracking of progress over time to help users make informed decisions about their nutritional health status.

Carotenoid-containing supplements are part of our portfolio of solutions for individuals to consider for raising their Prysm score, along with other health benefits depending on the product. When a supplement is Prysm-certified, it means that the product will raise your skin carotenoid score as measured by Prysm iO. Prysm-certified supplements can contain a range of different amounts and types of carotenoids.

Because of this variety, a certification system was proposed to help differentiate between expected Prysm responses from different supplements. Higher levels of Prysm certification would indicate a larger expected increase in score.

To validate this approach, this clinical study was conducted to assess the dose response of different amounts of carotenoids on Prysm scores.

OBJECTIVES

The objective of this randomized study was to investigate the dose-related effects on Prysm scores resulting from carotenoid supplementation and to validate Prysm certification levels.

DESIGN

Men and women aged 18 years and older were recruited to participate in this 12-week randomized study. Participants were instructed not to modify their usual diet or supplement routines for the duration of the study, aside from the assigned intervention.

Prysm scores were measured at baseline and weeks 1, 2, 4, 8, and 12. Participants were randomized into one of four groups:

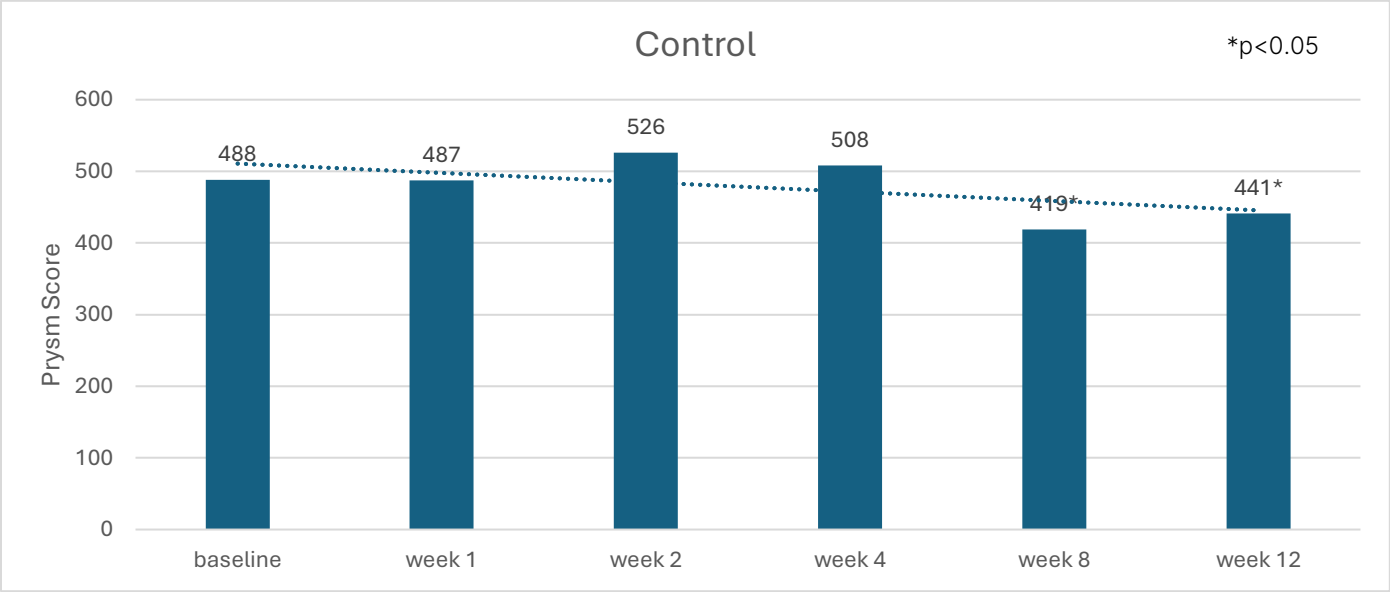
- **Control group:** No carotenoid supplementation (n = 13)
- **5 mg group:** 5 mg supplemental carotenoids per day (n = 43)
- **10 mg group:** 10 mg supplemental carotenoids per day (n = 44)
- **15 mg group:** 15 mg supplemental carotenoids per day (n = 44)

The carotenoid supplement contained lycopene, lutein, and beta-carotene. Participants were instructed to consume the supplement once daily with a meal.

RESULTS

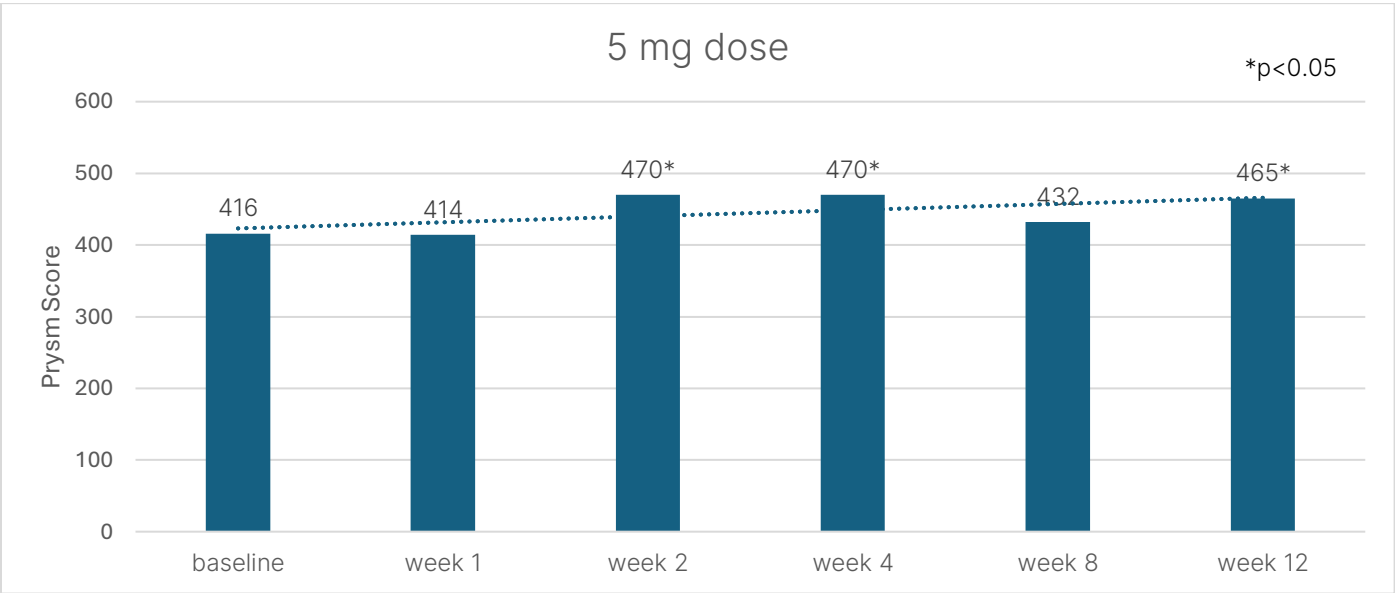
CONTROL GROUP

The control group did not take any supplemental carotenoids for the study. The average Prysm score at baseline was 488, and at the end of 12 weeks it was 441. Prysm scores stayed relatively constant for the first four weeks of the study, with a reduction at weeks 8 and 12. Scores with an asterisk indicates statistical significance compared to baseline.



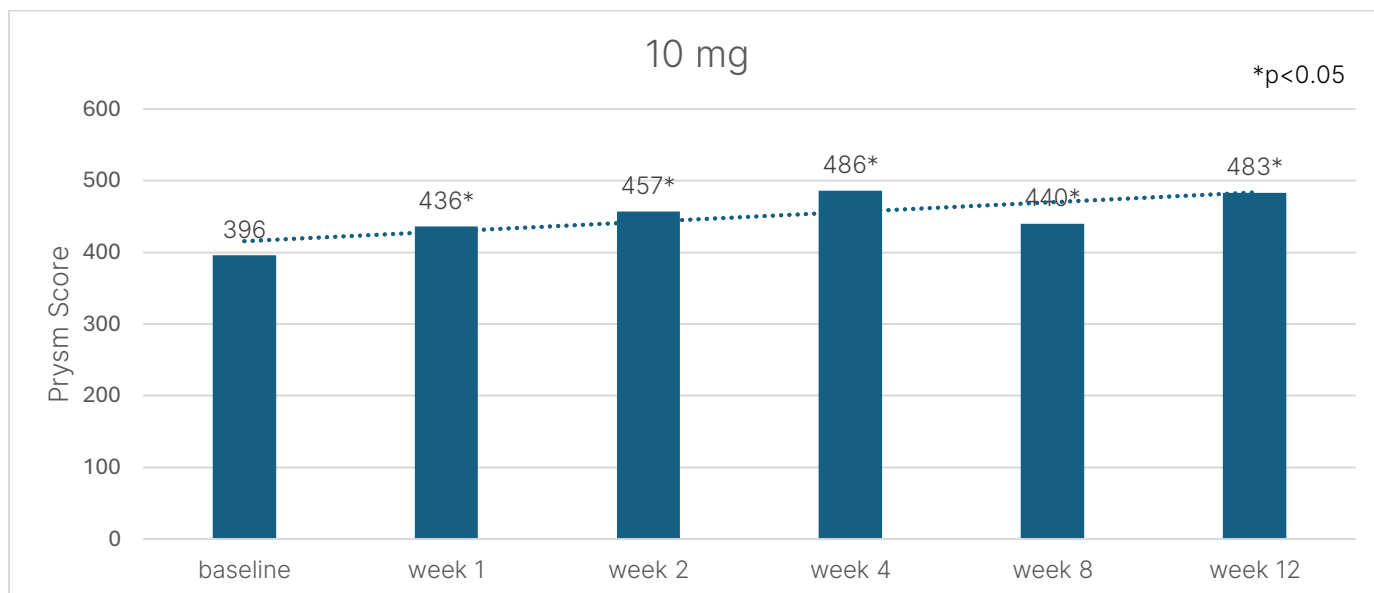
5 MG GROUP

The 5 mg carotenoid supplement group had an average Prysm score of 416 at baseline. This score stayed consistent through week 1 and then increased to 470 at weeks 2 and 4. There was a slight drop in average Prysm score at week 8 and then scores increased to 465 at week 12. Scores with an asterisk indicate statistical significance compared to baseline.



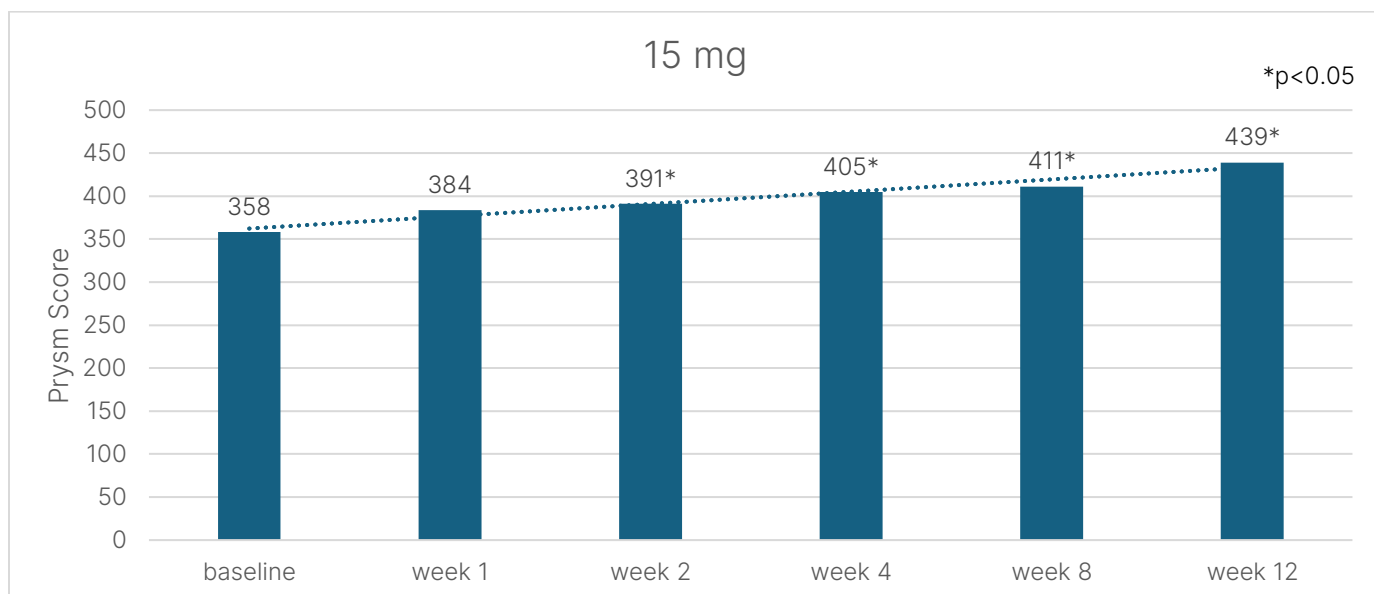
10 MG GROUP

The 10 mg carotenoid supplement group had a baseline Prysm score of 396 that steadily increased at weeks 1, 2, and 4. There was a slight drop at week 8 and then scores increased at week 12 to 483. Scores with an asterisk indicate statistical significance compared to baseline.



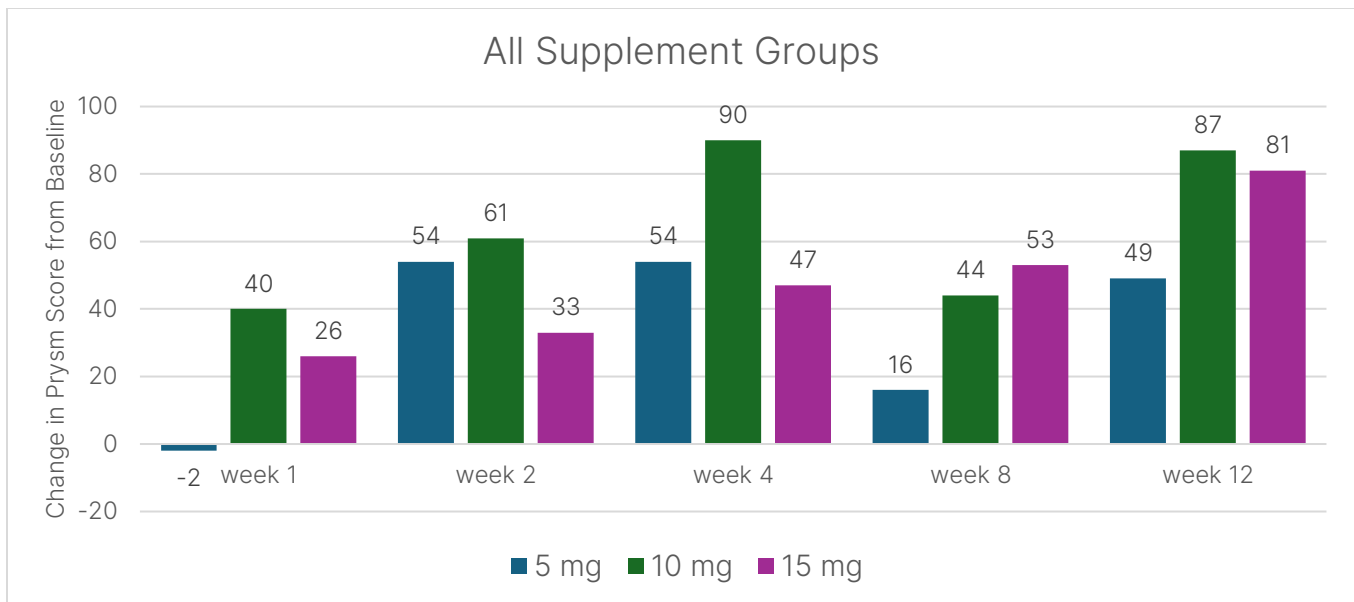
15 MG GROUP

The 15 mg carotenoid supplement group had an average baseline Prysm score of 358 which steadily increased throughout the entire study, ending with a Prysm score of 439 at 12 weeks. Scores with an asterisk indicate statistical significance compared to baseline.



ALL SUPPLEMENT GROUPS

The average Prysm scores in each group over time show general trends of greater improvements in Prysm score in the 10 mg and 15 mg groups compared to the 5 mg group, particularly after 12 weeks of consistent supplementation.



DISCUSSION

This study evaluated the dose-response relationship between carotenoid supplementation and changes in skin carotenoid levels as measured by Prysm iO over a 12-week period. The findings demonstrate that carotenoid supplementation leads to measurable increases in Prysm scores and that these increases generally correspond to the dose administered.

The control group showed stable or declining Prysm scores over time, which may reflect normal biological variability or dietary influences when carotenoid intake is not actively supported. In contrast, all supplementation groups exhibited improvements from baseline, supporting the sensitivity of Prysm iO to detect changes in skin carotenoid status.

Higher-dose groups (10 mg and 15 mg) demonstrated greater and more sustained increases in Prysm scores compared to the 5 mg group. Notably, participants in the 15 mg group began with the lowest baseline scores, yet showed consistent improvements throughout the study, indicating that individuals with lower initial antioxidant status may experience meaningful gains with higher carotenoid intake.

Interestingly, the 10 mg and 15 mg groups had similar increases in Prysm scores. Differences in baseline scores, normal biological variability, or perhaps absorption differences could account for this similarity. The percentage of carotenoids absorbed may be impacted by the dose consumed in a single setting, with saturation occurring with higher doses (4). This suggests that taking carotenoids in smaller doses throughout the day rather than all at the same time may lead to increased bioavailability and subsequent improvements in Prysm scores.

Significant changes were mostly noted after two weeks of supplementation, which suggests that it takes a few weeks for supplementation to have a measurable impact on Prysm scores, with more notable effects after four weeks of supplementation. Day-to-day changes in diet or supplementation are not likely to have a detectable effect on Prysm scores. Unlike blood levels, which are more sensitive to acute intakes of carotenoids, skin levels take more time to reflect changes in diet or supplementation. This means that skin carotenoid levels are potentially a better indicator of long-term intake of these beneficial compounds.

Slight decreases observed at week 8 in some groups may reflect normal biological variability. Despite these fluctuations, the overall upward trajectory and statistically significant improvements at week 12 support the observed effects, and the trend over time should be emphasized over isolated scores.

In this study, carotenoids were delivered via oral dissolvable strips, which were designed to dissolve in the mouth prior to swallowing. Carotenoids delivered in this fashion are expected to be absorbed in the gastrointestinal (GI) tract, consistent with their absorption from other oral delivery formats such as beverages, chewable tablets, tablets, capsules, and softgels.

Collectively, these findings support the use of Prysm iO as a noninvasive tool for monitoring changes in carotenoid status over time and provide validation for a tiered Prysm supplement certification framework based on carotenoid dose and expected biological response.

CONCLUSION

The results of this randomized clinical study demonstrate that carotenoid supplementation produces dose-dependent increases in skin carotenoid levels as measured by Prysm iO. Higher doses of carotenoids (10-15 mg) were associated with greater and more consistent improvements in Prysm scores over the 12-week period compared to the lower dose group (5 mg). These findings validate the ability of Prysm iO to detect meaningful changes in antioxidant status and support the rationale for Prysm supplement certification levels based on carotenoid dose and bioavailability.

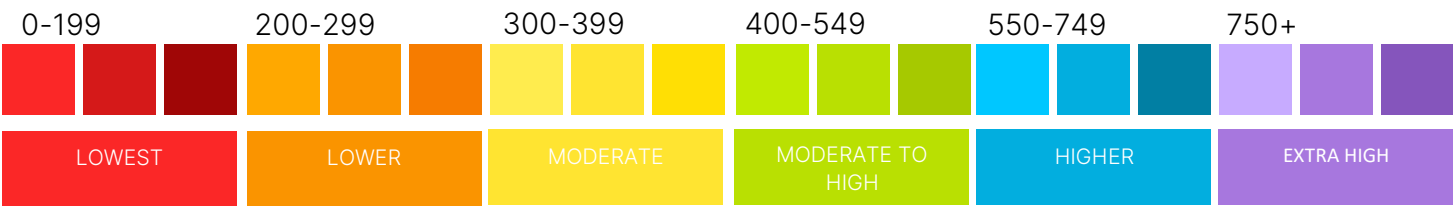
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APPENDIX

WHAT DOES MY SKIN CAROTENOID (SCS) MEAN?

Based on a distribution of skin carotenoid scores, a reference scale was created to capture an individual's response. This scale provides a number and color for ease of tracking and comparing scores over time. The lower an individual scores on the scale, the lower the antioxidant defense, while a higher score represents increased antioxidant defense. Red (0-199) represents low scores, orange (200-299) is lower, yellow (300-399) is moderate, green (400-549) is moderate to high, blue (550-749) is higher, and purple (750+) is highest.



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