
ANTHOCYANIN RESEARCH EFFICACY OF AN ANTHOCYANIN AND PREBIOTIC BLEND ON THE MICROBIOME AND METABOLIC HEALTH

The peer-reviewed study results summarized below were published in the *Journal of Nutrition and Metabolism* in 2018.

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BACKGROUND

The microbiome is an internal ecosystem of all the different microbes that live inside our bodies. This ecosystem consists of more total microbes (~39 trillion) than actual cells in the body. Our microbiome can vary drastically from one individual to another based on a wide variety of factors, including diet and lifestyle. The microbiome was once believed to be limited in its role, but advancements in research and technology have discovered that these microbes interact with each other and with our immune system to impact immune health, metabolic health (or biochemistry), and so much more. These microbes have tremendous potential to impact human physiology, so strategies to support our microbiome and other related health benefits are critical.

Anthocyanins and prebiotics are two categories of innovative nutrients shown to be beneficial for gut health. Anthocyanins are ingredients that are responsible for the red to blue-violet colors found in many plants and fruits, while prebiotics are specialized fibers that help healthy bacteria grow in the gut. Our previous work from preclinical studies has demonstrated positive effects of anthocyanins on the microbiome and improvements in inflammatory effects, so anthocyanins can have some prebiotic activity. Based on the scientific literature and our innovative research in this area, we conducted a clinical study to test the effects of anthocyanins and prebiotics in human volunteers to determine their ability to modulate the intestinal microbiome and impact inflammation.

METHODS

Because third-party research shows that obesity alters the nature of the intestinal microbiome and differs from the microbiome of lean individuals, we recruited healthy obese individuals without metabolic complications for this study. The open-label clinical study provided all volunteers with the anthocyanin-prebiotic blend supplement for eight weeks. Forty-six volunteers between the ages of 18 and 50 (average age of 43) completed the full study and were included in the final analysis. The primary endpoint of the study was to assess the change in microbiome after eight weeks of supplementation with the anthocyanin-prebiotic blend, which was taken once per day with breakfast. Volunteers were instructed not to change their normal diet in order to determine the effect of the supplement on the outcomes analyzed.

RESULTS

Microbiome

The primary result showed a significant difference in the microbiome after eight weeks of supplementation. This effect was demonstrated even with no statistically different changes in weight, caloric intake, or fiber intake between baseline and the end of the study. After supplementation, participants had a significant decrease in *Firmicutes* and a significant increase in *Bacteroidetes*. This finding is significant because obesity and overnutrition of high fat diets are associated with increased *Firmicutes* and decreased *Bacteroidetes*, so the supplement helped to shift the microbiome away from that of a typical obese individual. *Firmicutes* decreased from 75% to 59%, and *Bacteroidetes* increased from 14% to 35% over the course of the study (Figure 1).

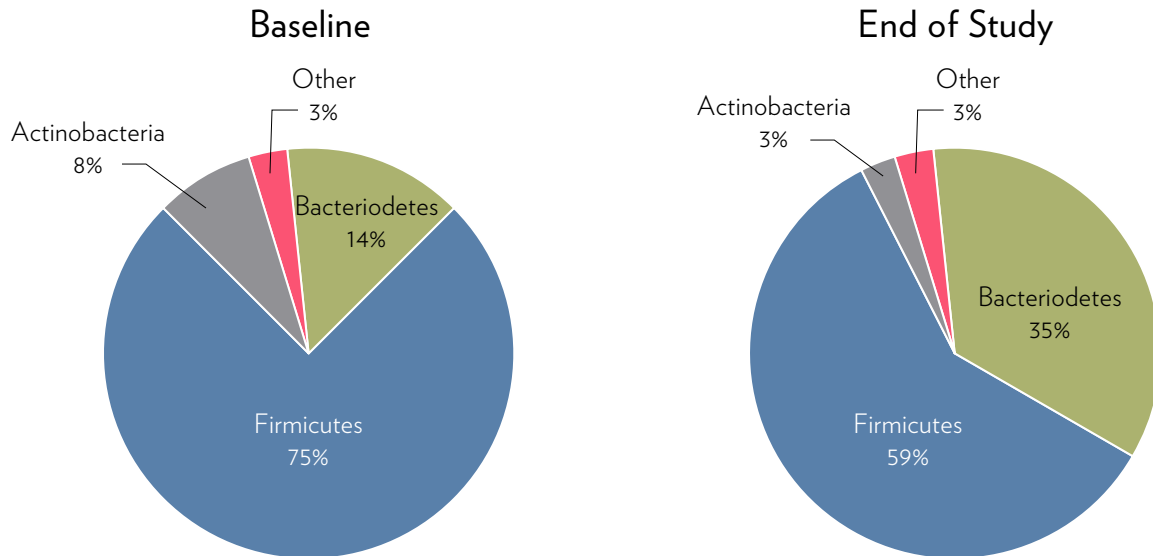


Figure 1

Metabolic Health

A secondary endpoint of the study was to determine the effect of the supplement on the effects of HbA1c. HbA1c is a measure of how well-controlled your blood sugar has been over a period of time—usually two to three months. It is used as a test to gauge how high or how low, on average, your blood glucose levels have been over this time period. This test is a measure of glycated hemoglobin, or the amount of glucose that binds to hemoglobin found in red blood cells. In this open-label clinical study, HbA1c significantly decreased from 5.51 mmol/L at baseline to 5.35 mmol/L at the end of the study (Figure 2), which is a positive change indicating better regulation of blood sugar, a parameter of metabolic health.

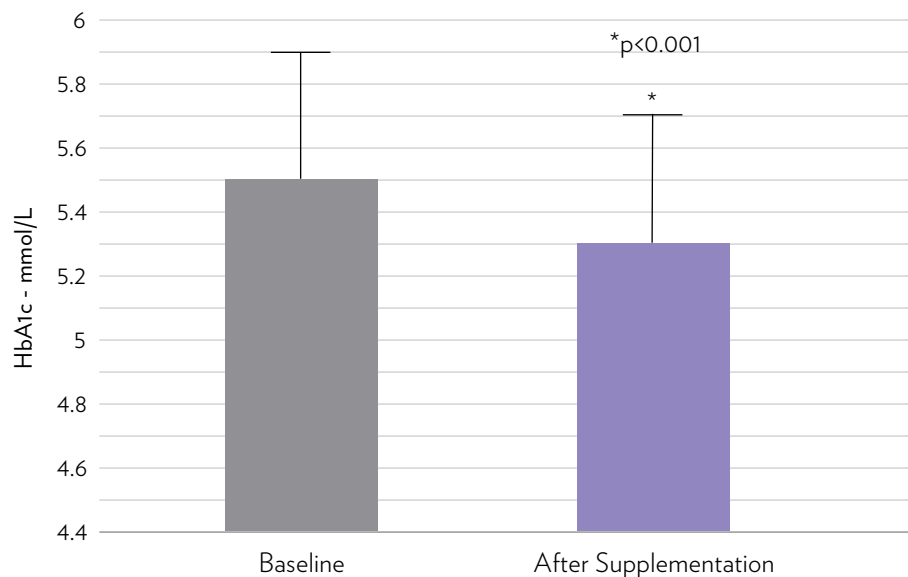


Figure 2

DISCUSSION

The findings of this open-label clinical study indicate that the consumption of an anthocyanin-prebiotic blend positively modulated the intestinal ecosystem. *Bacteroidetes* are typically lower in obese people by comparison with lean individuals, which represents an ecosystem in the gut that is characterized by increased inflammation that can have adverse consequences for human health. The finding that supplementation after only eight weeks had a positive effect in increasing *Bacteroidetes* and decreasing *Firmicutes* with no change in weight provides good evidence that certain dietary compounds can dramatically shift the relative concentration of key microbes in the gut.

It is not known how much of the benefits are attributed to the blend of anthocyanins and prebiotics compared to anthocyanins alone. However, because anthocyanins have been shown in our previous work and from the scientific literature to have positive effects on metabolic health parameters and the microbiome, we know anthocyanin ingredients contributed to these related benefits in this study. Supplementation demonstrated better regulation of blood glucose control as a marker of improved metabolic health and biochemistry. Participants also experienced a reduction in HbA1c, and this positive outcome is especially notable since none of these subjects experienced a substantial change in body weight or changes in dietary habits.

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REFERENCE

Hester SN, Mastaloudis A, Gray R, Antony JM, Evans M, Wood SM. Efficacy of an Anthocyanin and Prebiotic Blend on Intestinal Environment in Obese Male and Female Subjects. *J Nutr Metab.* 2018;2018:7497260. Published 2018 Sep 13. doi:10.1155/2018/7497260.

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