

ACADEMIC PAPERS

By Prof. Jose Maria Garcia

Butyric Acid, Gut Health

You may not have heard much about this molecule, but it's definitely time we pay more attention to it. This is due to the properties that are being discovered about butyric acid.

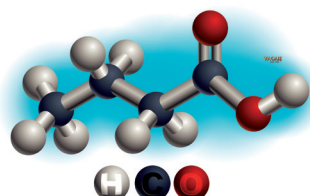
To introduce it, we must say that it is the shortest chain fat of all possible ones, with 4 carbon atoms, which establishes its molecule length as a short-chain fatty acid. In human nutrition, we only know of three so far: butyric acid, propionic acid, and acetic acid. This characteristic makes them special, and butyric acid becomes the "food" for our intestinal flora.

And this is the key to understanding the functions of butyric acid: intestinal flora and the maintenance of internal intestinal tissue.

Its properties are beginning to be studied for those suffering from conditions such as:

- Ulcerative colitis.
- Crohn's disease.
- Irritable bowel syndrome.
- Functional constipation.
- Diverticulosis.

It seems that this substance helps our bacteria create a conducive



environment for the health of our intestines. As many will already know, in recent years, diseases affecting the last part of the intestine have multiplied. We still don't know the exact cause of each, although there are theories that seem to be getting closer, like heavy metals in the fish commonly consumed. However, we don't yet have a concrete answer. What does seem certain is that butyric acid has a positive effect to some extent on all these problems.

This substance promotes the growth of positive bacteria and creates an environment that eliminates negative ones. We also find these positive effects:

- Nourishes the colonocyte, the endothelial cell present especially in the colon of our intestine. It helps in the proper absorption of sodium and water.
- This effect also produces an anti-inflammatory effect in this

area, which can be beneficial for the aforementioned diseases. It improves motility.

- As explained before, it improves the quality of intestinal flora. This leads to better digestion and nutrient absorption, as well as the formation of some vitamins.
- It seems to improve the overall metabolism of the body and the immune system's effect.

HOW TO GET MORE BUTYRIC ACID

Being a short-chain molecule, it can be formed in the intestine from the fermentation of some nutrients, especially those from fiber and complex carbohydrates.

These are the foods that can help you get more butyric acid:

- Whole grains, bread, and pasta. Anything that contains the type of dietary fiber that helps its formation.
- Legumes like lentils, chickpeas, and beans.
- Vegetables like garlic, onion, chicory, leek, asparagus, artichoke, beetroot.
- Butter.
- Potato, sweet potato, and turnips.

By Prof. Mauricio de Arruda

Exercise decreases risk of 13 types of cancer

A study by Moore (2016) analyzed data from 1.44 million people and found that regular physical exercise is associated with a lower risk of 13 types of cancer such as from the esophagus, liver, kidneys, stomach, endometrium, myeloid leukemia, myeloma, colon, rectum, head and neck, bladder and breast.

These data reinforce the importance of regular physical exercise, showing



that a small amount of exercise can already generate excellent results. Take in consideration that higher intensity activities usually generate superior results on the benefits.

SOURCE: Association of leisure-time physical activity with risk of 26 cancers in 1.44 million adults, Moore et al., 2016.

By Mag. Ville Isola

Effects of fat loss and low energy availability on the serum cardiometabolic profile of physique athletes

The 2024 study by Jouhki et al., published in the *Scandinavian Journal of Medicine and Science in Sports*, delves into the cardiometabolic effects of fat loss and low energy availability (LEA) on physique athletes. This investigation stands out for its comprehensive longitudinal analysis, offering significant insights into the interactions between diet, exercise, and metabolic health during pre-competition phases.

RESEARCH DESIGN AND PARTICIPANTS

The research focused on 23 IFBB athletes (DIET group) and 21 controls (CONT group) over a structured timeline that included a pre-competition diet period, a competition phase, and a post-competition weight regain phase. Key tools used in the study included dual-energy x-ray absorptiometry (DXA) for assessing body composition, nutritional logs, training diaries, and NMR spectroscopy for analyzing a wide array of serum metabolites.

METHODOLOGICAL APPROACH

Participants underwent rigorous monitoring, with assessments scheduled at four key stages: baseline, mid-diet, post-competition, and post-recovery. The study meticulously quantified changes in body composition, dietary intake, and metabolic profiles, focusing on how fat loss influenced by dietary restrictions and intensified training regimens impacted serum cardiometabolic markers.

KEY FINDINGS

One of the most significant outcomes highlighted the nuanced effects of fat loss on health markers:

- **HDL Cholesterol and Lipidome:** Physique athletes showed an increase in HDL cholesterol levels, particle size, and number. These

changes suggest an improvement in the lipid profile, traditionally associated with reduced cardiovascular risk.

- **VLDL Changes:** Concurrently, reductions were observed in VLDL lipids and serum triglycerides, indicating a favorable shift in lipid metabolism.
- **Inflammation Markers:** The study also noted a decrease in markers of low-grade inflammation, aligning with the positive changes in lipid profiles.
- These findings collectively point to beneficial cardiometabolic adaptations resulting from targeted fat loss during athlete-specific dieting phases.

IMPLICATIONS AND CONTRIBUTIONS

This research contributes significantly to our understanding of metabolic health in athletes, particularly in the context of stringent dietary and training regimens. The positive shifts in cardiometabolic markers during LEA, typically viewed as a risk factor in other contexts, suggest that under controlled and monitored conditions, LEA can be part of an effective strategy

for improving health markers without detrimental effects.

PRACTICAL APPLICATIONS

For coaches and sports health professionals, the study underscores the importance of a balanced approach to diet and exercise. Monitoring the intensity and duration of dietary restrictions and training is crucial to maximizing health benefits while minimizing risks, especially concerning hormonal and metabolic health.

CONCLUSION

This research offers robust evidence that strategically managed low energy availability (LEA) and targeted fat loss can significantly enhance cardiometabolic markers, including elevating HDL cholesterol levels and reducing VLDL lipids and serum triglycerides, without compromising overall metabolic health. These findings are critical for broadening our understanding of the impact that meticulously structured dietary and training interventions can have on the cardiometabolic health of physique athletes, both during competition preparation and in recovery phase. Importantly, the study illustrates that when LEA and fat loss are carefully orchestrated, they do not negatively impact metabolic functions; instead, they can improve specific health markers. This valuable insight lays a solid foundation for the development of customized nutritional and training programs designed to support not only the immediate performance goals of athletes but also their long-term health and well-being.



REFERENCE: Jouhki, I., Sarin, H. V., Jauhiainen, M., O'Connell, T. M., Isola, V., Ahtiainen, J. P., ... & Perola, M. (2024). Effects of fat loss and low energy availability on the serum cardiometabolic profile of physique athletes. *Scandinavian Journal of Medicine & Science in Sports*, 34(1), e14553.