

植物来源 n-3 多不饱和脂肪酸 (n-3 PUFAs) 改善血脂和肠道菌群的功效研究：双盲随机对照临床试验

Effect of plant-derived n-3 polyunsaturated fatty acids (n-3 PUFAs) on blood lipids and gut microbiota: a double-blind randomized controlled clinical trial

科研报告 Science Report

华中科技大学公共卫生学院刘洪杰博士在《*Frontiers in Nutrition**》上发表了植物来源 n-3 PUFAs 改善血脂及其相关肠道菌群作用的双盲随机对照临床试验研究[#]。结果详见下文：

与对照组（玉米油胶囊）相比，植物来源的 n-3 PUFAs（怡安软胶囊 B-stream soft gel[^]）干预 12 周后显著降低了边缘性高血脂个体的总胆固醇（TC）水平（ $P < 0.05$ ）。此外，与干预前比较，干预组在干预后甘油三酯（TG）水平显著降低（ $P < 0.05$ ）。以上结果说明怡安软胶囊 B-stream soft gel 具有降血脂的功效。

以往的研究表明肠道菌群在调节宿主脂质代谢中起着重要作用。高脂血症往往伴随厚壁菌门（*Firmicutes*）与拟杆菌门（*Bacteroidetes*）比值（F/B）的升高，而 F/B 是一个反映肠道稳态的重要指标。本研究还进一步研究了 B-stream soft gel 干预过程中肠道菌群的变化。结果表明，干预 12 周后 F/B 值显著降低（ $P < 0.05$ ），这意味着补充怡安软胶囊 B-stream soft gel 可能通过改善边缘性高血脂个体的肠道稳态，从而调节脂质代谢。

Dr. Liu Hongjie from the School of Public Health, Huazhong University of Science and Technology, published a **double-blind randomized controlled clinical trial study**[#] about plant-derived n-3 PUFAs improved blood lipids and related gut microbiota in *Frontiers in Nutrition**. The results are detailed below:

Relative to the control group (corn oil capsules), the plant-derived n-3 PUFAs (B-stream soft gel[^]) significantly reduced the total cholesterol (TC) levels of individuals with marginal hyperlipidemia after 12 week of intervention ($P < 0.05$). Moreover, as compared to pre-intervention, the triglyceride (TG) levels in the intervention group was significantly decreased ($P < 0.05$) after the intervention. The above results indicate that B-stream soft gel has the effect of lowering blood lipids.

Previous studies have shown that the gut microbiota plays an important role in regulating host lipid metabolism. Hyperlipidemia often accompanied by an increase in the ratio between *Firmicutes* and *Bacteroidetes* (F/B), and F/B is an important indicator of intestinal homeostasis. This study further investigated the changes in gut microbiota during B-stream soft gel intervention. The results showed that the F/B value was significantly reduced after 12 weeks of intervention ($P < 0.05$), which imply that the supplementation of B-stream soft gel may regulate lipid metabolism by improving intestinal homeostasis of the marginal hyperlipidemia individuals.

*此项研究发表于国际知名期刊《*Frontiers in Nutrition*》（IF 6.567, *Frontiers* 在全球 20 家最大的出版商中文章被引次数排名第三）。

* The study was published in the internationally renowned journal *Frontiers in Nutrition* (IF 6.567, Frontiers ranks as the third most-cited publisher among the 20 largest publishers in the world).

#该研究在美国 NIH 完成注册 <https://clinicaltrials.gov/>, 注册号为 HPG2017102074.

This study was registered at the NIH <https://clinicaltrials.gov/> as HPG2017102074.

^该研究中使用的 B-stream soft gel 是由无限极（中国）有限公司生产并提供。

^ The B-stream soft gel used in this study was produced and supplied by Infinitus (China) Co., Ltd..

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Effect of Plant-Derived n-3 Polyunsaturated Fatty Acids on Blood Lipids and Gut Microbiota: A Double-Blind Randomized Controlled Trial

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Background: Several cardioprotective mechanisms attributed to n-3 polyunsaturated fatty acids (PUFAs) have been widely documented. Significant interest has recently focused on the role of human gut microbiota in metabolic disorders. However, the role of plant-derived n-3 PUFAs on blood lipid profiles is controversial and the effect on gut microbiota is still unclear.

Objectives: We aimed to perform a double-blind randomized controlled trial to test the effect of plant-derived n-3 PUFAs on the blood lipids and gut microbiota of patients with marginal hyperlipidemia.

说明：实验结论以原论文为准

Note: The experimental conclusion is subject to the original paper