# 植物來源 n-3 多不飽和脂肪酸（n-3 PUFAs）改善血脂和腸道菌群的功效研究：雙盲隨機對照臨床試驗

# 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

科研報告 Science Report

華中科技大學公共衛生學院劉洪傑博士在《***Frontiers in Nutrition****》上發表了植物來源 n-3 PUFAs 改善血脂及其相關腸道菌群作用的**雙盲隨機對照臨床試驗研究#**。結果詳見下文：

與對照組（玉米油膠囊）相比，植物來源的 n-3 PUFAs（**怡安軟膠囊 B-stream soft gel^**）干預 12 周後顯著降低了邊緣性高血脂個體的總膽固醇（TC）水準（P<0.05）。此外，與干預前比較，干預組在干預後甘油三酯（TG）水準顯著降低（P<0.05）。以上結果說明怡安軟膠囊 B-stream soft gel 具有降血脂的功效。

以往的研究表明腸道菌群在調節宿主脂質代謝中起著重要作用。高脂血症往往伴隨厚壁菌門（*Firmicutes*）與擬桿菌門（*Bacteroidetes*）比值（F/B）的升高，而 F/B 是一個反映腸道穩態的重要指標。本研究還進一步研究了 B-stream soft gel 干預過程中腸道菌群的變化。結果表明，干預 12 周後 F/B 值顯著降低（P<0.05），這意味著補充怡安軟膠囊 B-stream soft gel 可能通過改善邊緣性高血脂個體的腸道穩態，從而調節脂質代謝。

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.

*此項研究發表於國際知名期刊《*Frontiers in Nutrition*》（IF 6.567，Frontiers 在全球 20 家最大的出版商中文章被引次數排名第三）。

* 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).

#該研究在美國 NIH 完成註冊 https://clinicaltrials.gov/，註冊號為 HPG2017102074。

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

^該研究中使用的 B-stream soft gel 是由無限極（中國）有限公司生產並提供。

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

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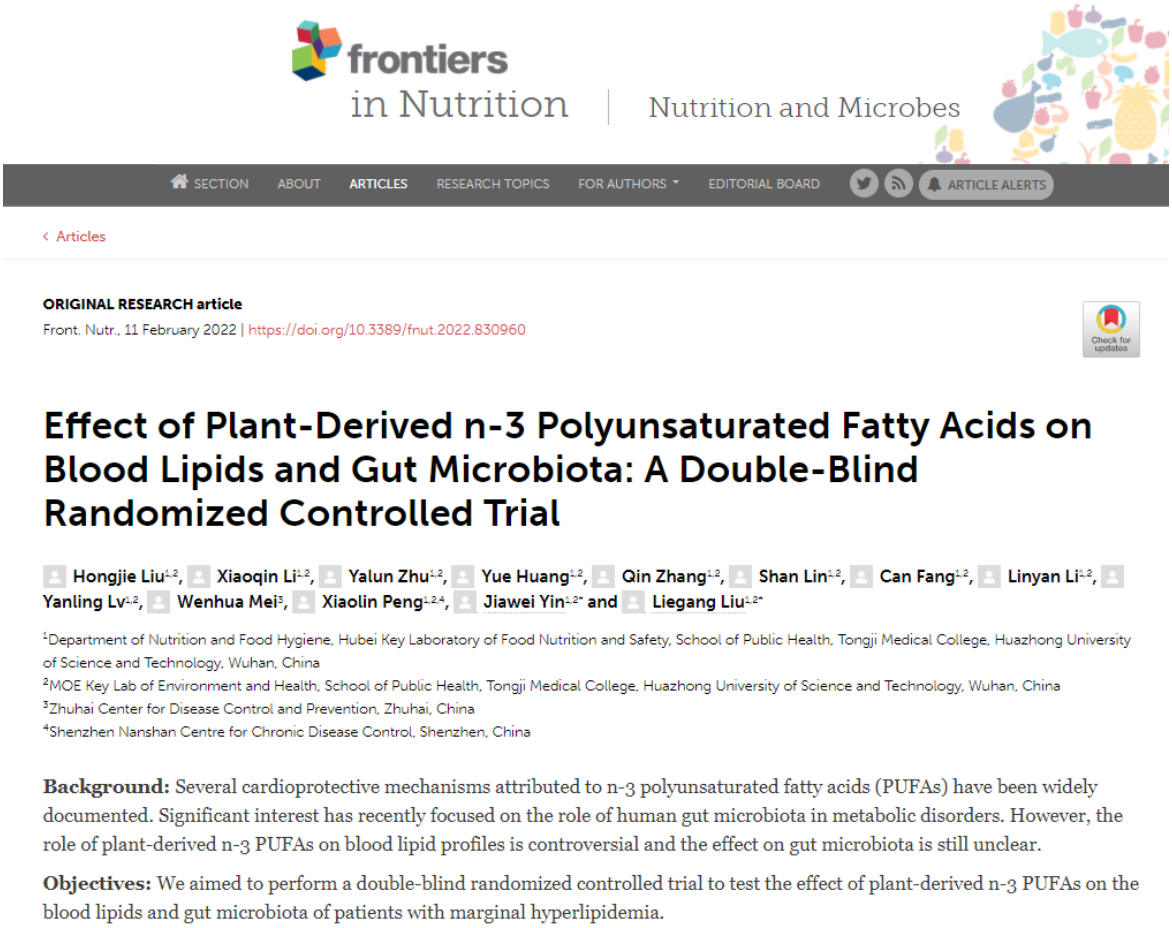

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# Effect of Plant-Derived n-3 Polyunsaturated Fatty Acids on Blood Lipids and Gut Microbiota: A Double-Blind Randomized Controlled Trial

Hongjie Liu[1,2], Xiaoqin Li[1,2], Yalun Zhu[1,2], Yue Huang[1,2], Qin Zhang[1,2], Shan Lin[1,2], Can Fang[1,2], Linyan Li[1,2], Yanling Lv[1,2], Wenhua Mei[3], Xiaolin Peng[1,2,4], Jiawei Yin[1,2]* and Liegang Liu[1,2]*

[1]Department of Nutrition and Food Hygiene, Hubei Key Laboratory of Food Nutrition and Safety, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China
[2]MOE Key Lab of Environment and Health, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China
[3]Zhuhai Center for Disease Control and Prevention, Zhuhai, China
[4]Shenzhen Nanshan Centre for Chronic Disease Control, Shenzhen, China

**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.

說明：實驗結論以原論文為準

Note: The experimental conclusion is subject to the original paper