# OMEGA-3 PUFA-ENRICHED, LOW-GLYCEMIC-LOAD PLANT-BASED DIET IMPROVES DYSLIPIDEMIA IN PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA

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## INTRODUCTION

The cumulative LDL-cholesterol (LDL-C) exposure places patients with familial hypercholesterolemia (FH) at high risk for premature atherosclerotic cardiovascular disease (ASCVD) [1]. Extensive evidence supports the cardioprotective effects of omega-3 polyunsaturated fatty acids (PUFA), including their beneficial effects on serum LDL-C levels.

## AIM

We aimed to evaluate the efficacy of a low-glycemic-load plant-based diet enriched in omega-3 PUFA in reducing blood levels of LDL-C and apolipoprotein B (apoB) in FH patients.

## CONTACT

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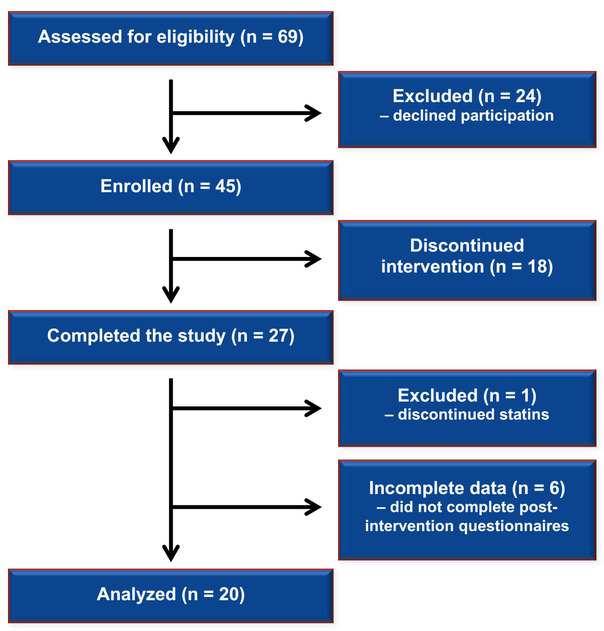
## REFERENCES

1. Chlebus K, Zdrojewski T, Gruchała M, Gałąska R, Pajkowski M, Romanowska-Kocejko M, Chmara M, Pencina MJ. Cardiovascular risk factor profiles in familial hypercholesterolemia patients with and without genetic mutation compared to a nationally representative sample of adults in a high-risk European country. Am Heart J. 2019; 218: 32–45.

## METHODS

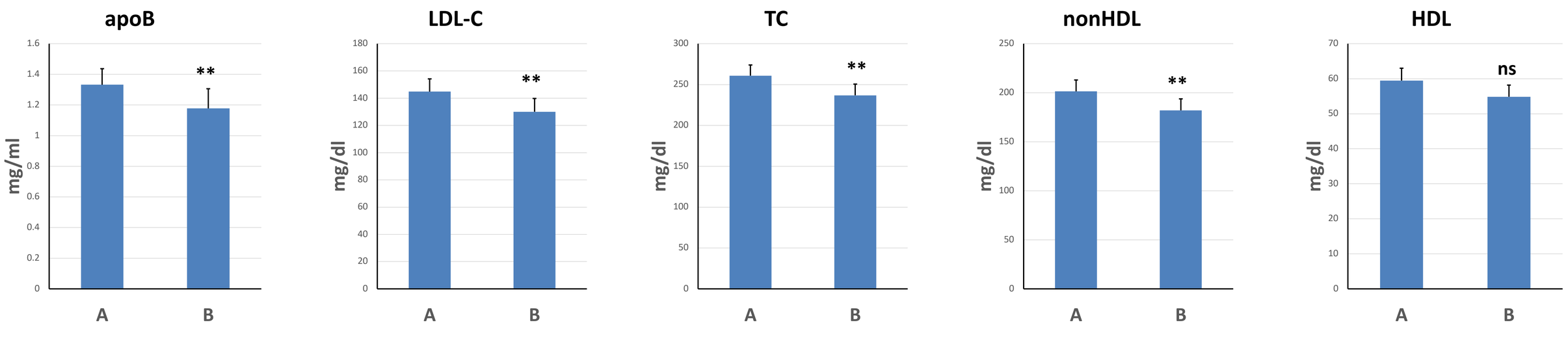
Twenty unrelated adult FH patients (12 treated with statins: rosuvastatin, n=10; atorvastatin, n=2) followed a plant-based diet emphasizing the consumption of oily fish, nuts, and vegetable oils rich in omega-3 PUFA for 3-4 months. The experimental diet was individually prescribed for each patient. Serum levels of LDL-C and apoB were measured at baseline and after the intervention using an enzymatic assay and ELISA, respectively. The data from 24-hour dietary recalls, 3-day food records, and food frequency questionnaires (FFQ) were analyzed using the Wilcoxon matched-pairs test or Fisher's exact test.




| Characteristics | Values |
|---|---|
| Patients [n] | **20** |
| Gender F/M [n] | **14/6** |
| Age | **56.3** (38-63) |
| BMI | **24.8** (20.5-32.4) |
| Pharmacotherapy (statins) | **12** |
| Rosuvastatin/Atorvastatin [n] | **10/2** |
| TC [mg/dl] | **260.9** (162-364) |
| LDL-C [mg/dl] | **144.8** (73-237) |
| Mutations: | |
| *LDLR* | **7** |
| *APOB* | **3** |
| *LDLR+APOB* | **1** |

## RESULTS

During the intervention, the dietary intake of omega-3 PUFA increased (by 249.1%, p=0.00020) but the glycemic load was reduced (by 18.11%, p=0.00073). At the end of the intervention, FH patients showed a reduction in serum LDL-C and apoB levels: LDL-C decreased by 10.49% (p=0.00207) and apoB by 12.51% (p=0.01963).




## CONCLUSIONS

A low-glycemic-load plant-based diet enriched in omega-3 PUFA significantly lowers serum levels of LDL-C and apoB in FH patients, and might thus reduce cardiovascular risk in familial hypercholesterolemia, complementing pharmacological lipid-lowering therapies.