**1. ABOUT THE DATASET**

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Title: Dataset supporting paper ‘Fish oil supplements, but not oily fish, alter the number and function of extracellular vesicles in healthy human subjects: A randomized, double-blind, placebo-controlled, parallel trial’

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Rights-holders: University of Reading and Amal Sharman

Publication Year: 2024

Description: This dataset includes all summaries of raw data supporting the results presented in the paper " Fish oil supplements, but not oily fish, alter the number and function of extracellular vesicles in healthy human subjects: A randomized, double-blind, placebo-controlled, parallel trial".The objective of this paper is to investigate the effects of fish oil supplements providing 2.2 g/d of n-3 polyunsaturated fatty acids (PUFAs) and oily fish at a level achievable in the diet providing 1.44 g/d of n-3 PUFA, on the numbers, compositions and procoagulant activity of extracellular vesicles (EVs) in healthy human volunteers. Data about EVs parameters include: i. the numbers, and size of circulating total EVs measured by Nanoparticle Tracking Analysis (NTA); ii. the numbers of EV subpopulations (i.e. phosphatidylserine-positive EVs (PS+EVs), platelet-derived EVs (PDEVs), endothelial-derived EVs (EDEVs)) by flow cytometry (FCM); iii. the procoagulatory activity of circulating EVs including *in vitro* thrombogenic potential of EVs in activating tissue factor-dependent thrombin generation measured by thrombin generation assay and *in vitro* clot-forming capacity of EVs measured by clot formation and lysis assays. Data about fatty acid compositions of red blood cells (RBCs) and EVs were measured by gas chromatography. Data about plasma lipid profile include total cholesterol, low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and triacylglycerol concentrations measured by Randox. Data about subjects baseline characteristics include i. height, weight and body mass index (BMI) measured by Tanita; ii. blood pressure measured by upper arm blood pressure monitor.

Cite as: Zhou, Ruihan and Sharman, Amal (2024): Dataset supporting paper ‘Fish oil supplements, but not oily fish, alter the number and function of extracellular vesicles in healthy human subjects: A randomized, double-blind, placebo-controlled, parallel trial.’ Dataset. 10.17864/1947.001350

Related publication: Amal Sharman, Ruihan Zhou, Dionne Tannetta, Jamie Pugh, Graeme Close, Helena Fisk, Philip Calder and Parveen Yaqoob (2024). Fish oil supplements, but not oily fish, alter the number and function of extracellular vesicles in healthy human subjects: A randomized, double-blind, placebo-controlled, parallel trial. (In preparation to be submitted to The Journal of Nutrition).

**2. TERMS OF USE**

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**3. PROJECT AND FUNDING INFORMATION**

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Title: The effect of oily fish and fish oil supplementation on markers of cardiovascular health and exercise performance

Dates: October 2016- January 2017

Funding organisation: Liverpool John Moores University from BBC Trust Me I’m A Doctor

**4. CONTENTS**

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**1. EVs\_fatty\_acid\_compositions\_data.csv**

All of raw data about fatty acid compositions of circulating EVs measured by gas chromatography before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively .

Abbreviation: *AA, arachidonic acid; ALA, alpha-linolenic acid; DGLA, dihomo-γ-linolenic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; ETA, eicosatetraenoic acid; EPA, eicosapentaenoic acid; MUFAs, monounsaturated fatty acids; PUFAs, polyunsaturated fatty acids; SFAs, saturated fatty acids.*

**2. EVs\_fibrinolysis\_data.csv**

All of raw data about clot formation and fibrinolytic activity of circulating EVs measured by clot formation and lysis assays including time to full lysis and area under the curve (AUC) before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively .

Abbreviation: *AUC, area under the curve.*

**3. EVs\_thrombin\_generation\_data**

All of raw data about thrombogenic potential of circulating EVs measured by thrombin generation assay including lag time, peak concentration of thrombin, velocity-index and AUC before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively. Two separate analyses were conducted: (i) platelet-free plasma (PFP) minus pooled vesicle-depleted plasma (VDP): thrombin generation in PFP from study samples compared with that in pooled vesicle-depleted plasma (VDP) alone and (ii) Isolated EVs minus VDP: thrombin generation in VDP plus EVs isolated by SEC from study samples compared with that in VFP alone.

Abbreviation: *AUC, area under the curve; VDP,* *vesicle-depleted plasma.*

**4. FCM\_data**

All of raw data about the numbers of PS+EVs, PDEVs and EDEVs measured by FCM before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively.

Abbreviation: *EDEVs,* *endothelial-derived extracellular vesicles; PDEVs,* *platelet-derived extracellular vesicles; PS+EVs, phosphatidylserine positive extracellular vesicles.*

**5. NTA\_data**

All of raw data about the numbers and mean sizes of circulating total EVs measured by NTA before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively. Total EVs was calculated as

Total events X Dilution factor = Total EVs

Abbreviation: *EVs, extracellular vesicles.*

**6. Plasma\_lipid\_profile\_data.csv**

All of raw data about plasma lipid profile including total cholesterol, low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and triacylglycerol concentrations measured by Randox before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively .

Abbreviation: *HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol.*

**7. RBC\_fatty\_acid\_compositions\_data.csv**

All of raw data about fatty acid compositions of RBC measured by gas chromatography before and after the intervention of oily fish (n=14), fish oil supplement (n=15) and control (n=13), respectively .

Abbreviation: *AA, arachidonic acid; ALA, alpha-linolenic acid; DGLA, dihomo-γ-linolenic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; ETA, eicosatetraenoic acid; EPA, eicosapentaenoic acid; MUFAs, monounsaturated fatty acids; PUFAs, polyunsaturated fatty acids; SFAs, saturated fatty acids.*

**8. Subjects\_baseline\_characteristics\_data.csv**

All of raw data about subjects baseline characteristics including age, gender, height, weight and BMI measured by Tanita, and BP measured by upper arm blood pressure monitor in the oily fish group (n=14), fish oil supplement group (n=15) and control group (n=13), respectively .

\*Missing results for subjects no.21, 54, 100 in the fish oil supplement group and no.71 in the control group due to the failure of data collection.

Abbreviation: *BMI, body mass index; DBP, diastolic blood pressure; SBP, systolic blood pressure.*

**5. METHODS**

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Detailed information about methods could be found in the paper ‘Fish oil supplements, but not oily fish, alter the number and function of extracellular vesicles in healthy human subjects: A randomized, double-blind, placebo-controlled, parallel trial’.