The effect of omega -3 supplements on the serum levels of ACE/ACE2 ratio as a potential key in cardiovascular disease and COVID-19; a randomized clinical trial in the Covid-19 uninfected Jordanian people

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Objectives:
This randomized controlled clinical trial was conducted to determining the effect of the omega-3 fatty acid supplementations 300 mg per day for 8 weeks on serum levels of ACE/ACE2 ratio in healthy Jordanian participants with vitamin D deficiency (VDD)**.**
Methodology:
This randomized controlled clinical trial was designed so that the participants were randomly divided into two groups, one interventional group and the other control group. The physical and clinical characteristic of individuals in both groups were measured and analyzed. The comparisons between the two groups and the changes in each group before and after taking omega-3 doses were studied through statistical analysis. Possible factors that have a role in the changes shown by multivariate stepwise regression. Follow-up period lasted 10 weeks
Results:
Healthy Jordanian male and females (N=60) with diagnosed VDD were recruited into the study, mean age of the participants was 37.85 ± 9.85 years, 45 % of the sample were female and 55% were male. Omega-3 Supplements resulted in a significant decrease in serum ACE levels, ACE/ACE2 ratio and serum 25-hydroxy vitamin D (25OHD) Level significantly. While the change in serum ACE2 levels and serum TG levels were insignificant. Also a significant increase in serum LDL levels were observed.
Conclusion:
It is possible that taking high doses of omega-3 fatty acid supplementations may have positive effects on the heart and circulatory system and could protect from COVID-19 or decrease disease severity, in connection with a decrease in the ACE/ACE 2 ratio. On the other hand, omega-3 supplement may have negative effect on cardiovascular system due to the significant increase in serum LDL levels.
Trial registration: This trial was registered at clinicaltrials.gov as NCT04658433**.**

Keywords: angiotensin converting enzyme, angiotensin converting enzyme/angiotensin converting enzyme2 Ratio, 25-hydroxy vitamin D, triglycerides, low density lipoprotein

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