

# Effect of Pomegranate Seed Oil on Development of Atherosclerosis in ApoE/LDLR<sup>-/-</sup> Mice

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CLA is the general term referring to a group of positional and geometric isomers of linoleic acid (LA, cis-9,cis-12 C18:2n-6). Recently, not only for CLA but also for conjugated linolenic acid (CLnA) several unique biological effects have been found. CLnA is one of the highly unsaturated forms of conjugated fatty acids with triple bonds that occurs in multiple positional and geometric isomers (cis and trans) of linolenic acid (LnA, cis-9,cis-12,cis-15 C18:3n-3). CLnA has been found abundantly in some seed oils, such as Pomegranate seed oil (cis-9,trans-11,cis-13; C18:3). The objective of the study was to verify the antiatherogenic potency of CLnA.

Mice (16-18 weeks of age) with pre-established atherosclerosis were randomly assigned to experimental groups and fed for the next 2 months. The experimental diets were: Control (AIN-93G), Flaxseed oil (FO, as a source of LnA), Pomegranate seed oil (PSO, as a source of CLnA) and CLA (cis-9,trans-11). Diets were supplied with seed oils equivalent to an amount of 0.5% of studied fatty acids. Total cholesterol (TC) and triacylglycerols (TAG) were analyzed using commercially available kits. Cross-section analysis of heart was used to assess quantification of atherosclerosis. 10 µm thick serial cryo-sections were stained with Oil-red-O. Additionally, entire aorta's en face analysis was used.

The experimental treatments had no effect on body weight. PSO significantly ( $P < 0.05$ ) decreased TC. No effect on TAG was observed. PSO tended to decrease the area of atherosclerotic plaque in en face and cross section analysis.

In conclusion, Pomegranate seed oil had potentially, antiatherosclerotic effect in apoE/LDLR<sup>-/-</sup> mice.