

# Effects of improved fat meat products consumption on emergent cardiovascular disease markers of male volunteers at cardiovascular risk

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## Abstract

High meat-product consumption has been related to cardiovascular disease (CVD). However, previous results suggest the benefits of consuming improved fat meat products on lipoprotein-cholesterol and anthropometric measurements. Present study aims to assess the effect of consuming different Pâté and Frankfurter formulations on emergent CVD biomarkers in male volunteers at increased CVD risk. Eighteen male volunteers with at least two CVD risk factors were enrolled in a sequentially controlled study where different pork-products were tested: reduced-fat (RF), omega-3-enriched-RF (n-3RF), and normal-fat (NF). Pork-products were consumed during 4-week periods separated by 4-week washout. The cardiometabolic index (CI), oxidized low density lipoproteins (oxLDL), apolipoproteins (Apo) A1 and B, homocysteine (tHcys), arylesterase (AE), C-reactive Protein (CRP), tumor necrotic factor-alpha (TNF $\alpha$ ), and lipoprotein (a) (Lp(a)) were tested and some other related ratios calculated. AE, oxLDL and Lp(a), AE/HDLc, LDLc/Apo B, and AE/oxLDL rate of change were differently affected ( $P < 0.01$ ) by pork-products consumption. RF increased ( $P < 0.05$ ) AE, AE/HDLc and AE/oxLDL ratios and decreased TNF $\alpha$ , tHcys; n-3RF increased ( $P < 0.001$ ) AE, AE/HDLc and AE/oxLDL ratios and decreased ( $P < 0.05$ ) Lp(a); while NF increased ( $P < 0.05$ ) oxLDL and Lp(a) levels. In conclusion, RF and n-3RF products affected positively the level of some emergent CVD markers. The high regular consumption of NF-products should be limited as significantly increased Lp(a) and oxLDL values. The high variability in response observed for some markers suggests the need to perform more studies to identify targets for RF- and n-3RF-products.