

# **Effects of the association of aging and obesity on lipids, lipoproteins and oxidative stress biomarkers: a comparison of older with young men**

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## **Abstract :**

In this study, plasma lipids, lipoproteins and markers of oxidant/antioxidant status were investigated in young (n = 45) and older (n = 40) obese men and compared to those in young (n = 65) and older (n = 55) normal weight controls. The purpose was to determine whether obesity exacerbates or not lipid, lipoprotein abnormalities and oxidative stress in older men. Our findings showed that all obese patients had increased plasma triglyceride, cholesterol, LDL-cholesterol, -triglyceride and HDL-triglyceride levels concentrations compared to controls (P < 0.01). However, the younger obese men had relatively larger and accentuated changes in plasma lipids and lipoproteins than the older patients. Additionally, total antioxidant capacity (ORAC), vitamins C and E were lower while hydroperoxides and carbonyl proteins were higher in young and older obese patients compared to their respective controls (P < 0.001). Erythrocyte antioxidant SOD and catalase activities were enhanced in obese young patients, but reduced in obese older men. Glutathione peroxidase activity was low in obesity irrespective of age. In multiple regression analysis, BMI significantly predicted total cholesterol, LDL-C, LDL-TG and HDL-TG (P < 0.0001). These relationships were not modified by age. BMI alone was a not a significant predictor for ORAC, vitamins C, E, catalase and Glutathione peroxidase. However, the interaction BMI-age significantly predicted these parameters and explained 28-45% of their changes. BMI was a significant predictor of SOD, carbonyl proteins and hydroperoxides. This effect became more significant (P < 0.0001) and worsened with BMI-age interaction. In conclusion, lipoprotein metabolism and oxidant/antioxidant status are altered in obesity irrespective of age. However, obesity-related lipid and lipoprotein alterations were attenuated while oxidative stress was aggravated in older adults.

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