

## **Gender-related drug effect on hs-CRP and on several markers of oxidation stress in type 2 diabetic patients with and without vascular complications**

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Our previous studies demonstrated that lipid and protein oxidation products including antioxidant status can be used as markers of risk for complications in poorly controlled type 2 diabetics. In this study we aimed to evaluate the effect of gender and gender-related responsiveness to metformin and/or statin treatment on inflammation marker (hs-CRP), and on oxidative stress parameters in poorly controlled type 2 diabetics with and without vascular complications. Our findings show that in diabetics with complications, lipoperoxidation, measured as malondialdehyde (MDA), and carbonyl residues (CO) were significantly ( $p < 0.05$ ) higher in females than in males. When we compared diabetics without and with complications, we found that antioxidant status, measured as FRAP (Ferric reducing ability of plasma) and SOD activity levels, was significantly increased both in male and female patients, while hs-CRP levels was significantly raised in males and not in females. The treatment with metformin significantly reduced hs-CRP in all diabetic patients with or without complications, while statin treatment increased circulating SOD levels in females and not in males. Using multivariate analysis a positive correlation between hs-CRP and triglyceride (TG) levels was found indicating that hs-CRP was increased by TG; the treatment with metformin and/or statin was able to reduce its amount in male and female patients with complications, whereas the reduction was more evident in diabetic females. Finally, multivariate analysis showed that statin addition also reduced MDA levels in all diabetic patients with complications. The antioxidant capacity, measured as FRAP values, was significantly ( $p = 0.020$ ) reduced by MDA and by TG levels irrespective of the gender. In conclusion, these data supported the addition of statin to diabetic standard therapy to control oxidation injury and that of metformin for reducing inflammation markers.