



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## Placental Heat Shock Protein 70 Overexpression Confers Resistance Against Oxidative Stress in Preeclampsia

Ekambaram PADMINI, Bose Vijaya GEETHA  
P.G. Department of Biochemistry, Bharathi Women's College,  
Affiliated with University of Madras,  
North Chennai, Tamilnadu - INDIA

 [Keywords](#)  
 [Authors](#)



[medsci@tubitak.gov.tr](mailto:medsci@tubitak.gov.tr)

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**Abstract:** Aims: Preeclampsia is a hypertensive disorder of human pregnancy and a leading cause of premature delivery and fetal growth retardation. The purpose of this study was to evaluate the expression of heat shock protein 70 (HSP70), both constitutive (HSC70) and induced (HSP70) forms, along with oxidative stress status in the placental tissues of normotensive (control group) and preeclamptic pregnancies. Materials and Methods: Placental samples were collected after delivery from normotensive pregnancies and preeclamptic patients (n = 20, each). Lipid peroxidation product malondialdehyde (MDA) and nitrite and nitrate levels, along with antioxidants such as superoxide dismutase (SOD) and glutathione peroxidase (GPx) and glutathione were estimated in the placental homogenate to evaluate the oxidative stress. Results: Placental tissue MDA levels and concentrations of nitrite and nitrate were significantly higher in the preeclamptic group (P < 0.001) than the control group. Placental SOD and GPx activities and the reduced glutathione (GSH)/oxidized glutathione (GSSG) ratio were significantly lowered in the preeclamptic (P < 0.001) group than the control group. Both placental HSC70 and HSP70 were in significantly higher concentrations in the preeclamptic ( $7.25 \pm 0.76$ ,  $27.67 \pm 2.32$  ng/mg protein; P < 0.001) than the control ( $5.23 \pm 0.64$ ,  $17.47 \pm 1.22$  ng/mg protein) group, respectively. Conclusions: The above data provide the first evidence that high levels of HSP70 are associated in the placenta of pre-eclamptic women. This enhanced expression is probably to exhibit its multiple protective effects on the cell's response to stress.

**Key Words:** Preeclampsia, peroxynitrite, superoxide dismutase, placenta, HSP70, oxidative stress, antioxidants

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