

Effect of black tea in modulating the asymmetric dimethyl arginine in placental trophoblast during preeclampsia

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From National Conference on Natural Products as therapeutics, Medical Microbiology, Nanobiology and System biology: Current Scenario & Emerging Trends, 'NATCON-2014'.

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18-19 September 2014.

American J of Bio-pharm Biochem and Life Sci 2014 September, Vol. 4 (Suppl 1): P 37

ABSTRACT

Trophoblasts are specialized cells of the placenta during pregnancy that plays an important role in embryo implantation and interaction with decasualized maternal uterus. Preeclampsia is a serious disorder of pregnancy, characterized by deficient trophoblast invasion and generalized activation of maternal endothelial cells. Placental hypoxia is responsible for clinical manifestations of this disease. Nitric oxide is an essential for vasodilation of spiral artery synthesized from L-arginine by endothelial nitric oxide synthase (eNOS). These enzymes are competitively inhibited by the Asymmetric dimethylarginine (ADMA) which are by-products of protein degradation, ADMA are predominantly broken down by the enzyme DDAH into L-citrulline and dimethylamine. ADMA are highly expressed in the stress conditions, which affect the placental endothelium during pregnant condition and it may promote the premature delivery. Tea is an alternative natural medicine used for the management and treatment of preeclampsia and its associated complications. The aim of the study is to determine the modulatory effect of Tea (*Camellia sinensis*) on nitrate stress (ADMA) in placental trophoblast (Pt) of normotensive and preeclamptic condition. Results indicate that nitrate stress marker ADMA was significantly increased by 1.3 fold during preeclampsia when compared with normotensive Pt. However incubation with black tea significantly decreased the ADMA level by 13% and 29% in normotensive Pt and preeclamptic Pt respectively. In conclusion the ADMA levels are significantly altered and tea infusions may play a significant role in the management of preeclampsia via ADMA regulations.