

**Comparative Effect of Pioglitazone And Resveratrol
In Exogenous Asymmetric Dimethylarginine
(ADMA) –Induced Hypertension and Cardiac
dysfunction**

In Rats

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Pharmacology

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ABSTRACT

Background and purpose: The present study investigates the effect of Pioglitazone and Resveratrol on arterial blood pressure and cardiac dysfunction in asymmetric dimethyl arginine induced hypertensive rats. **Methods and Results:** Hypertension was induced by oral administration of asymmetric dimethyl arginine (ADMA) in a dose of 10 mg/kg/day for 4 weeks. Twenty four adult male albino rats were used and were randomly divided into four groups (Control group, ADMA (Hypertensive) group, Pioglitazone (10 mg/kg/day for 4 weeks) + ADMA group and Resveratrol (5mg/kg/day for 4 weeks) + ADMA group). At the end of the 4th week systolic blood pressure and diastolic blood pressure of animals were measured using the rat tail cuff technique. Blood sampling was carried out for all the experimental rats for estimation of serum nitrite level. The heart was divided into two parts, one for estimation of dimethylarginine dimethyl aminohydrolase (DDAH) and the other for histopathological examination. ADMA produced significant increase in systolic and diastolic blood pressure by 35.5% and 26.2% respectively compared to control group. The percentage decrease of nitrite and cardiac gene expression of DDAH in ADMA (hypertensive) group was 85.5%, 80.3% respectively compared to control group. Pioglitazone caused significant decrease in systolic blood pressure and diastolic blood pressure by 41.6% and 42% respectively in comparison to ADMA (hypertensive) group. There was significant elevation in the level of nitrite in serum and gene expression of DDAH by 521% and 297.5% compared to ADMA (hypertensive) group. Treatment with Resveratrol significantly decreased the systolic blood pressure and diastolic blood pressure by 16.5% and 10.5% respectively and produced elevation in the level of nitrite in serum and gene expression of DDAH by 417.5% and 318.5% respectively compared to ADMA (hypertensive) group. Pioglitazone produced decrease in systolic blood pressure and diastolic blood pressure by 30% and 35.2% respectively as compared to Resveratrol effect. The histopathological changes showed a considerable improvement in Pioglitazone and Resveratrol treated groups, as pathological grading scores are 2 and 1 respectively while the ADMA showed a score of 4.

Key Words: Pioglitazone; Resveratrol; Asymmetric dimethyl arginine (ADMA); hypertension.