Effect of magnesium supplementation on erythrocyte aggregation in NOS inhibition-induced hypertension model

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This study investigated the effects of magnesium on blood rheological properties and blood pressure in nitric oxide synthase (NOS) inhibition-induced hypertension model. Hypertension was induced by oral administration of the nonselective NOS inhibitor N-nitro-L-arginine methyl ester (L-NAME, 25 mg/kg/day) for 6 weeks and systolic blood pressure measured by the tail-cuff method. The groups which given magnesium supplementation was fed with rat chow containing 0.8% magnesium oxide during the experiment. At the end of experiment, blood samples were obtained from abdominal aorta, under ether anesthesia. RBC aggregation was determined by ektacytometry. Plasma fibrinogen concentration was evaluated by ELISA. Whole blood and plasma viscosity were determined by rotational viscometer. Blood pressure was elevated in hypertensive groups and suppressed by magnesium therapy. Plasma viscosity and RBC aggregation were found to be higher in hypertensive rats than control animals and, these parameters significantly decreased in magnesium supplemented hypertensive animals. These results confirm that blood pressure, plasma viscosity and RBC aggregation increased in NOS inhibition-induced hypertension model and oral magnesium supplementation improved these parameters.