EFFECT OF L-ARGININE SUPPLEMENTATION ON PLASMA CONCENTRATIONS OF ADMA AND L-ARGININE/ADMA RATIO

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Nitric oxide (NO) is synthesized by NO synthase (NOS) from L-arginine and plays an important role in the vascular healthy. Asymmetric dimethylarginine (ADMA), an endogenous competitive inhibitor of NOS, has been shown to decrease both the production and bioavailability of NO. Elevated plasma levels of ADMA have been considered as an indicator of endothelial dysfunction and a risk factor for cardiovascular disease. The plasma levels of ADMA and the effect of L-arginine supplementation on plasma concentrations of ADMA and L-arginine/ADMA ratio were investigated in fifteen apparently healthy subjects. Blood samples were drawn after an overnight fasting for baseline measurements (T0). Afterwards, subjects were randomly assigned to ARG (6g of L-arginine) or PLA (corn starch) groups and blood samples were drawn again after 120 minutes of supplementation (T120). Plasma concentrations of ADMA and L-arginine were measured by HPLC with precolumn derivatization with o-phthaldialdehyde and monitored with a fluorescence detector. Two-way ANOVA with repeated measures showed no significant changes in plasma concentrations of ADMA between both ARG and PLA groups at any time point (T0: 0.99±0.42 vs. 0.94±0.59 µmol/L; T120: 0.83±0.28 vs. 1.15±0.59 µmol/L). Furthermore, normal ADMA concentrations at T0 were observed in both groups. L-arginine/ADMA ratio was significantly higher in ARG as compared with PLA only after 120 minutes of supplementation (T0: 61.9±28.3 vs. 46.9±34.9; T120: 109.6±42.6 vs. 31.8±10.8). L-arginine supplementation does not reduce plasma concentrations of ADMA when it is in normal range. Testing for ADMA levels may indicate which patients could have health benefits with L-arginine supplementation.