

Vitamin C and E supplements improve the impaired antioxidant status and decrease plasma lipid peroxides in hemodialysis patients.

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Abstract

This study investigated the supplementation with vitamin C or/and E on the antioxidant system in hemodialysis patients. Thirty-eight hemodialysis patients (27 males and 11 females) with the average of 60 years old were divided into four groups: placebo (400 mg starch/time), vitamin C (400 mg/time)-, vitamin E (400 mg d,l- α -tocopheryl acetate/time)-, and vitamin C (400 mg/time) + E (400 mg d,l- α -tocopheryl acetate/time)-supplemented groups for 6-week supplementation. The patients orally received three capsules of placebo or antioxidant(s) three times a week after finishing hemodialysis. Thirty-six healthy subjects (22 males and 14 females) with the average of 58 years old were recruited as the control group. Hemodialysis patients significantly decreased plasma vitamin C by 32%, erythrocyte glutathione by 26%, and plasma total antioxidant status by 9%, but increased plasma lipid peroxide levels by 102% compared with the control group at the baseline. The levels of plasma vitamin C and total antioxidant status significantly decreased by 24% and 18%, respectively, from the post-dialysate compared with those from the pre-dialysate. At week 6, vitamin C + E-supplemented group significantly increased plasma vitamin C and E, erythrocyte glutathione, and plasma antioxidant status, and inhibited plasma lipid peroxides compared with placebo group. Additionally, vitamin C + E-supplemented group had higher plasma vitamin C, vitamin E, and total antioxidant status, and lower plasma lipid peroxides than placebo group even at least 2 weeks after the termination of the supplements. Therefore, antioxidant vitamin supplements could improve antioxidant status and decrease lipid peroxides of hemodialysis patients.