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EFFECT OF COOKED FOOD WITH STIR-FRIED OLIVE OIL OR NOT ON ERYTHROCYTE MEMBRANE FATTY ACID CONTENTS IN HEMODIALYSIS PATIENTS

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Objectives : Hemodialysis (HD) patients had higher mortality rate caused by cardiovascular disease and high oleic contents of erythrocyte membrane compared to general population. Olive oil, one of Mediterranean diets, may be helpful for reducing risk of cardiovascular disease. However, there is no study about the effect of olive oil as a cooked food on erythrocyte membrane fatty acid (FA) contents in HD patients. The purpose of this study is to know whether taking meals with olive oil effects on erythrocyte membrane FA contents in HD patients. In addition, we tried to find the differences of FA contents according to stir-fried olive oil or not.

Methods : This single blinded randomized clinical trial enrolled 31 HD patients. We selected 6 kinds of menu with properly restricted diet for HD patients and supplied food as a lunch meal, 3 times per week, at hemodialysis day. Ten grams of extra virgin olive oil was used for each lunch. Lunch meal was stir-fried with olive oil in one group. In the other group, olive oil was just mixed into meal without stir-frying. We checked eaten amount of lunch and evaluated dietary questionnaire at baseline and after 12 weeks. Erythrocyte membrane FA content was measured by gas chromatography at baseline and after 12 weeks.

Results : Twenty seven patients finished this study (14 patients without stir-fried extra virgin olive oil vs. 13 patients with stir-fired extra virgin olive oil). There was no significant difference in age (58.0±12.1 vs 59.1±12.7 years), dialysis duration (62.3±39.4 vs 63.4±46.6 months), diabetes prevalence (85.7% vs 53.8%), baseline chemistry data including lipid profiles according to stir-fried oil intake group or not. All participants consumed more than 85% of lunch boxes provided. In both group, there was no significant changes of total calories and animal lipid components during this study. There was no change of lipid profile at 12 weeks compared to baseline data. Trans-oleic acid content of erythrocyte membrane was significantly increased after 12 weeks compared to baseline levels in patients taking stir-fried olive oil in the meal. The erythrocyte membrane contents of saturated fatty acids including stearic acids and serum albumin level were significantly increased in patients supplied meal was not stir-fried with olive oil after 12 weeks compared to baseline levels. EPA

content of erythrocyte membrane was decreased and ratio of AA and EPA was increased in patients taking meal was not stir-fried with olive oil compared to baseline levels.

Conclusions : Taking olive oil of 30 grams per week with cooked food did not positively effects on the fatty acid contents of the erythrocyte membrane except for increased serum albumin level and stir-frying with olive oil may be harmful because of increasing trans-oleic acid in HD patients.

Keywords : hemodialysis,olive oil, nutrition, diet