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EFFECT OF CURCUMIN ON THE LEVELS OF TOTAL CHOLESTEROL, LDL-CHOLESTEROL, THE AMOUNT OF F2-ISOPROSTAN AND FOAM CELL IN AORTIC WALL OF RATS WITH ATHEROGENIC DIET

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Abstract

Death caused by cardiovascular and cerebrovascular disease is still the highest. Atherosclerosis is due to hypercholesterolemia of predisposing factor of both diseases. Curcumin has antioxidant character that can inhibit lipid peroxidase to atherogenesis process. The aim of this study was to prove the effect of curcumin to decrease total cholesterol level, LDL-cholesterol level, the number of F2-isoprostan and foam cell in aortic wall in rats receiving atherogenic diet. To determine the effect of curcumin to decrease total cholesterol level, LDL-cholesterol, the number of F2-isoprostan and foam cell in wistar strain white rats, atherogenic diet was given for 10 weeks into 6 groups (n=24): atherogenic diet group (control), atherogenic diet group + curcumin (50 mg/kg bw per day), atherogenic diet group + curcumin (100 mg/kg bw per day), atherogenic diet group + curcumin (200 mg/kg bw per day), atherogenic diet group + curcumin (400 mg/kg bw per day), normal diet group (control). After 10th weeks, total cholesterol level and LDL-cholesterol were measured by spectrophotometry. The number of F2-isoprostan and foam cell was counted semi quantitatively by light microscope. F2-isoprostan staining was done with immunohistochemistry Avidin Biotin Complex method, and foam cell staining with HE-oil Red O. The results showed that the highest total cholesterol level was found in group I (275.15 ± 10.01; mean ± SD), the highest LDL-cholesterol level found in group I (158.15 ± 12.19). Statistically, total cholesterol level and LDL-cholesterol level in group I were significantly higher (p = 0.05) than those in other groups. Total cholesterol level and LDL-cholesterol was found to decrease in group V (93.31 ± 4.07; 19.76 ± 5.25). The highest number of F2-isoprostan was found in group I (5.5 ± 1.29). The highest foam cell was found in group I (3.5 ± 1). Statistically, the number of F2-isoprostan and foam cell in group I were significantly higher (p = 0.05) than those in other groups. The number of F2-isoprostan and foam cell were found to decrease in group V (1 ± 0.82 ; 0.5 ± 0.58). In conclusion, curcumin has effect in decreasing total cholesterol level, LDL-cholesterol, number of F2-isoprostan and the formation of foam cell significantly in rats with atherogenic diet. The administration of curcumin in a dose of 400 mg/kg bw daily is more effective in decreasing total cholesterol level, LDL-cholesterol, number of F2-isoprostan and the formation of foam cell than in other 3 doses of curcumin.

Keyword : curcumin, total, cholesterol, LDL-cholesterol, F2-isoprostan, foam, cell, and, atherogenic, diet,

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