



***In vitro* radical scavenging activity of short arm octopus added kimchi and its anti-atherogenic effects in Apo E KO mice**

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Kimchi is a Korean traditional fermented vegetable. It usually served as a side dish. The functional property of kimchi has been studied extensively, in particular with lipid lowering and anti-atherogenic properties⁽¹⁾. Seafood is often added to the kimchi to make taste better. In this study, short arm octopus rich in n-3 polyunsaturated fatty acids (PUFA) and amino acid taurine⁽²⁾ is added to the kimchi and its radical scavenging activity and anti-atherogenic properties were studied in the comparison of ordinary Korean cabbage kimchi.

Short arm octopus added kimchi was fermented at 4C until pH of kimchi reached 4.3 ± 0.1. Ethanol extracts of freeze-dried kimchi were used for the examination of radical scavenging activities, *in vitro*. For the animal study, pagan's rodent atherogenic diet containing 10 g% of freeze-dried Korean cabbage kimchi (control) or short arm octopus added kimchi (SK) were provided to the apo E KO mice for 8 weeks.

IC₅₀ for DPPH, hydroxyl and superoxide anion of SK were significantly lowered, compared with the control (*p* < 0.05). Plasma and hepatic triglyceride concentrations for the mice fed SK decreased and their fatty streak lesion size was also significantly reduced (*p* < 0.05). It seems that n-3 PUFA in short arm octopus present as approximately 60% to the total fatty acids is responsible for TG lowering effects. Triglyceride (TG) lowering effects of n-3 fatty acids are well established⁽³⁾. Hepatic TG synthesis might be suppressed by n-3 fatty acid which subsequently reduced plasma TG concentration via diminution of very low density of protein (VLDL) synthesis. Plasma total cholesterol and LDL-cholesterol concentration of SK group decreased but the differences were not significant.

	Control		SK	
	Mean	SD	Mean	SD
Plasma lipids (mg/dL)				
Triglyceride	120.50	16.18	76.25*	29.51
Total cholesterol	1228.53	101.06	1074.03	177.98
LDL cholesterol	1207.57	100.21	1038.17	173.43
HDL cholesterol	17.78	1.17	18.03	1.67
Hepatic lipids (mg/g tissue)				
Triglyceride	40.98	8.68	24.85*	5.19
Total cholesterol	7.25	1.48	6.65	1.08
TC/HDL	70.34	3.95	59.63*	9.40
Lesion area (% of whole aorta)	33.08	9.28	19.33*	2.30

n = 6 each group. *Data between two group are significantly different with student's t-test at *p* < 0.05.

In conclusion, in addition of short arm octopus to Korean cabbage kimchi seems to increase health benefits further, in particular, anti-atherogenic effects that has been already reported from Korean cabbage kimchi.

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