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Effect of aqueous extract of Moringa oleifera Lam. leaves on LDL receptor mRNA level of HepG2 cells, in comparison to atorvastatin

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Heart disease is one of the major causes of death among world population. Free radicals and high level of low density lipoproteins (LDL) in blood have been verified to be related to inflammation, plaque accumulation and atherosclerosis. Complications resulted from atherosclerosis are hypertension, stroke, and myocardial infarction, etc. Moringa oleifera Lam. is a popular plant of South East Asia. In Thailand, M. oleifera leaves are used as common vegetable and traditional medicine for more than 100 years. In our previous studies, we found that water extract of Moringa oleifera Lam. leaves possessed antioxidant activity (in vitro and ex vivo), hypolipidemic and anti-atherosclerotic activities (in vivo). These effects are contributed from the phenolic compounds in the aqueous extract. We intended to elucidate the underlying mechanisms of our finding. Therefore, in this study, we evaluated the LDL receptor mRNA level of HepG2 cells treated with water extract of M. oleifera leaves and compared with atorvastatin. Treatment of M. oleifera leaves extract (concentration 1-100 ug/ml) and atorvastatin (concentration 1x10-6 Molar) significantly increased the LDL receptor mRNA levels of HepG2 cells up to 80% and 100%, respectively (comparing with non-treated group). Thus, the result obtained revealed that one of the hypolipidemic mechanisms of M. oleifera leaves extract is by increasing LDL receptor mRNA level of HepG2 cells. So, M. oleifera leaves should be recommended to use as food or traditional medicine for anti-atherosclerotic purpose.