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EFFECT OF MILK THISTLE (*SILYBUM MARIANUM*) ON GLUCOSE AND LIPID METABOLISM

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ABSTRACT

Obesity is a complex disease caused by various factors and is one of the risk factors for many other diseases, such as diabetes, hypertension and cardiac disease. Recently, the patients with obesity have increased and many supplements have been used for treatment of obesity. Traditionally, milk thistle (*Silybum marianum*) has been used mainly for the hepato-biliary dysfunction in Europe, and a large number of chemical constituents including flavonolignans, known as silymarin, have been identified in its seed. Recently, it was reported that the milk thistle extract (MTE) could improve the glucose and lipid metabolism in type 2 diabetic patients. However, the mechanism of its improvement is not clarified. In this study we examined the effects of MTE on the differentiation of mouse 3T3-L1 preadipocytes into mature adipocytes. 3T3-L1 cells were cultured with medium containing MTE or troglitazone (positive control). The intracellular TG accumulation was assessed as differentiation-inducing index. The expression of resistin, one of the adipokines secreted by hypertrophied adipocytes and lead to insulin resistance, was measured by qRT-PCR. The MTE induces the differentiation from preadipocyte to mature adipocyte in a dose-dependent manner. Furthermore, the water layer obtained by the liquid-liquid partition from MTE significantly decreased the mRNA levels of resistin. The data showed that the MTE induces the differentiation of adipocytes and reduces the expression of resistin due to induction of apoptosis of enlarged adipocyte, and this mechanism might be lead to the mitigation of insulin resistance.

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