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Alliin attenuates 1, 3-Dichloro-2-Propanol-induced lipogenesis in HepG2 cells through activation of the AMP-activated protein kinase-dependent pathway

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ABSTRACT

Accumulating evidence reveals the association of 1, 3-Dichloro-2-Propanol (1, 3-DCP) exposure and lipogenesis. Alliin, the most abundant sulphur compound in garlic, has been demonstrated to exhibit hypoglycemic, antioxidant and anti-inflammatory activities. Here, we showed that alliin attenuated lipogenesis induced by 1,3-DCP and that the reduction was due to activation of the AMPK pathway. HepG2 cells exposed to 1,3-DCP exhibited significant increase of triglyceride(TG) and total cholesterol(TC), and alliin reduced the accumulation. Most importantly, alliin could up-regulate the phosphorylation of AMPK and down-regulate protein and gene expressions of SREBP-1; FAS; SREBP-2;HMGCR in 1,3-DCP-induced HepG2 cells. The results demonstrated that alliin was effective on attenuating 1,3-DCP-induced lipogenesis via activation of the AMPK–SREBPs signaling pathway in HepG2 cells.

Keywords: SACS; 1,3-DCP; lipogenesis; AMPK; SREBP; HMGCR